IN CANADA 30 CENTS

AMAZING STORIES

MAY
25 Cents

The Cerebral Library
by David H. Keller M.D.

Beings of the Boundless Blue
by Walter Kateley

Through the Vibrations

Across the Void, Part II

Find Radio Troubles in 30 Seconds

FREE

Send for Your Gift Copy NOW

The Easiest Way to Learn Radio!

HAVE you ever invited friends to listen to a good radio program and then been keenly embarrassed because your radio wouldn't work? Has your radio reception ever been distorted or imperfect just when you wanted to hear every word distinctly? Most of us *have had* such experiences, and most of us *will have them* for years to come.

That's why our staff of expert radio engineers has especially prepared this RADIO TROUBLE FINDER volume for you. In times of need, it's worth its weight in gold. In simple words and easy-to understand pictures and diagrams, it shows you just how to find and correct any radio trouble *quickly*.

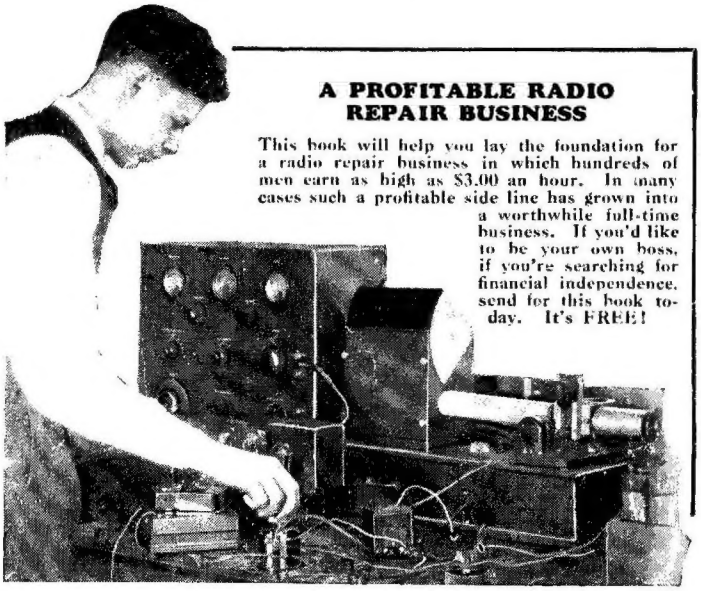
Simple Charts Show You How

In the fastest form of reading *by charts* you learn at once what to do when tubes do not light; when tubes light and you get no reception; when your reception is weak. What to do when you get a hum or whistle; when your reception fluctuates; when your reception is distorted; when your power device overheats; etc.

After you have read this RADIO TROUBLE FINDER volume, you will know how to locate any kind of radio difficulty, and how to repair it in a jiffy!

Over a hundred thousand set owners already have the RADIO TROUBLE FINDER constantly at their elbows. They know that with it at hand they can depend on getting whatever radio programs they want, *when they want them!* Thousands have used the knowledge gained from this handy volume to make marked improvements in the reception of their sets, and in repairing the sets of friends. In many cases it has been the basis for starting a very profitable radio repair business.

These people have gladly paid real money for the RADIO TROUBLE FINDER. BUT, we have set aside a copy to be shipped to you, prepaid, ABSOLUTELY FREE!



A PROFITABLE RADIO REPAIR BUSINESS

This book will help you lay the foundation for a radio repair business in which hundreds of men earn as high as $3.00 an hour. In many cases such a profitable side line has grown into a worthwhile full-time business. If you'd like to be your own boss, if you're searching for financial independence, send for this book today. It's FREE!

A Gift from RADIO NEWS

We are offering you this remarkable volume FREE as an unprecedented reward for your merely accepting a six months' cut-rate introductory subscription to RADIO NEWS, the world's greatest radio magazine that no set owner should be without.

Do you want to know all about new sets and latest improvements? Would you like to know what goes on behind the scenes of the big broadcast stations and the inside stories of broadcast programs and artists? Do you know how to tell a good loudspeaker from a bad one? How to construct the latest power-supply unit? How to save money in servicing your set? *It's all in* RADIO NEWS!

If you are a DX fan, you'd probably like to have a list of every broadcasting station in the world. Or perhaps you'd like to experience the thrill of hearing foreign continents direct with a modern short wave receiver. Or perhaps it's television, auto radios, aviation radio telephony, or the projection and filming of talkies that interests you? ***Frankly, whatever it is, if it's radio news you will find it in*** **RADIO NEWS!**

That's why RADIO NEWS has practically twice as many readers as any other radio magazine. That's why you should read it too!

Send for Your FREE TROUBLE FINDER Volume TODAY!

Simply mail the coupon on the left and we will ship you your copy of the complete TROUBLE FINDER volume by return mail ENTIRELY FREE—at the same time entering your subscription to RADIO NEWS for the next six months at only $1, saving you 50c on its regular newsstand value!

RADIO NEWS,
Dept. 2105-B, 381 Fourth Avenue, New York, N. Y.

Gentlemen: Ship me ENTIRELY FREE, postpaid, a copy of your RADIO TROUBLE FINDER volume- at the same time entering my subscription for the next 6 big issues of RADIO NEWS at only $1 which I enclose. (Regular newsstand value $1.50.)

Name .....

Address .....

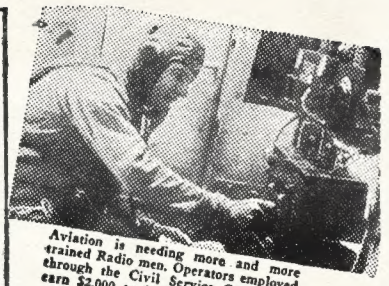
City and State .....

Are you a serviceman ☐? Dealer ☐? Engineer ☐? Experimenter ☐? Radio Enthusiast ☐?

Broadcasting stations need trained men continually for jobs paying $1,800 to $5,000 a year.

Television—the coming field of many great opportunities—is covered by my course.

Operators on ships see the world and get good pay plus expenses.



Aviation is needing more and more trained Radio men. Operators employed through the Civil Service Commission earn $2,000 to $2,800 a year.

Talking Movies—an invention made possible only by Radio—offers many fine jobs to well trained Radio men.

You'll Get *Thrills*-Adventure BIG PAY in RADIO

J. E. Smith, Pres.

I will Train You at Home to Fill a Fascinating Job in Radio

Radio's Amazing Growth is Opening Hundreds of Big Jobs Every Year

You like action, romance, thrills! You'll get them in Radio—plenty of them! Big pay, too. That is why I urge you to mail the coupon below for my free book of startling facts on the variety of fascinating, money-making opportunities in this great, uncrowded field. It also explains how you can quickly learn Radio through my amazingly simple 50-50 method of home-study training, even though you may not now know the difference between a "Screen Grid and a Gridiron". Thousands of men who knew absolutely nothing about Radio before taking my course are today making real money in this growing industry.

Thrilling Jobs That Pay $50 to $100 a Week

Why go along with $25, $30 or $45 a week in dull, no-future work when there are plenty of good jobs in Radio that pay $50, $75 and up to $250 a week? For instance, by taking my training, you can see the world in grand style as a Radio operator on shipboard. There are many splendid openings in this line with good pay plus your expenses. You'll also find thrills and real pay in Aviation Radio work. Broadcasting is another field that offers big pay and fascinating opportunities to men who know Radio. And think of the great, thrilling future for men with *Radio training* in Television and Talking Movies. My free book tells all about these and many other branches of Radio that bring you in contact with interesting people, pay big money and make life pleasant for you. Without doubt, Radio training is the key that opens the way to success. And *my* training, in particular, is the *only* training that makes you a *"Certified RADIOTRICIAN"*—the magic words that mean valuable recognition for you in whatever type of Radio work you take up after graduation. You'll see *why*, when you receive my interesting book.

Earn While You Learn

You don't have to quit your present job to take my course! You stay right at home, hold your job, and learn in your spare time. (Lack of high school education or Radio experience are no drawbacks.) I teach you to begin making money shortly after you enroll. My new practical method makes this possible. I give you eight big laboratory outfits that teach you to build and service practically every type of receiving set made. Many of my students earn $15, $20, $30 weekly while learning. Earle Cummings, 18 Webster St., Haverhill, Mass., writes: "I made $375 in one month in my spare time, installing, servicing, selling Radio sets." And let me emphasize right here that a Radio business of your own is one of the money-making opportunities my training prepares you for in case you wish to settle down at home.

Get My Free Book

Send the coupon below for my 64-page book of opportunities in Radio and information on my home-study training. It has put hundreds of fellows on the road to bigger pay and success. It will tell you exactly what Radio offers you, and how my Employment Department helps you get into Radio after you graduate. I back my training with a signed agreement to refund every penny of your money if, after completion, you are not satisfied with the Lesson and Instruction Service I give you. Fill in and mail the coupon NOW!

J. E. SMITH, Pres., Dept. 1ES
National Radio Institute,
Washington, D. C.

Act Now

Mail Coupon Today

J. E. SMITH, *President*
National Radio Institute, Dept. 1ES
Washington, D. C.

Dear Mr. Smith: Send me your book "Rich Rewards in Radio" giving information on the big-money opportunities in Radio and your famous 50-50 method of home-study training. I understand this places me under no obligation and that no salesman will call.

Name.....

Address.....

City..... *State*.....

Occupation.....

Travelled 75,000 Miles

"Dear Mr. Smith: I have worked as Junior Operator on board S. S. Dorchester and Chief Operator of the Chester Sun. I have travelled from 75,000 to 100,000 miles, visited ports in various countries, fished and motored with millionaires, been on airplane flights, etc. I am now with Broadcasting Station WREN." (Signed) Robin D. Compton, 1213 Vermont St., Lawrence, Kansas.

$400 a Month

"The Radio field is getting bigger and better every year. I have made more than $400 each month and it really was your course that brought me to this." J. G. Dahlstead, 1484 So. 15th St., Salt Lake City, Utah.

Employment Service to all Graduates

LEARN ELECTRICITY

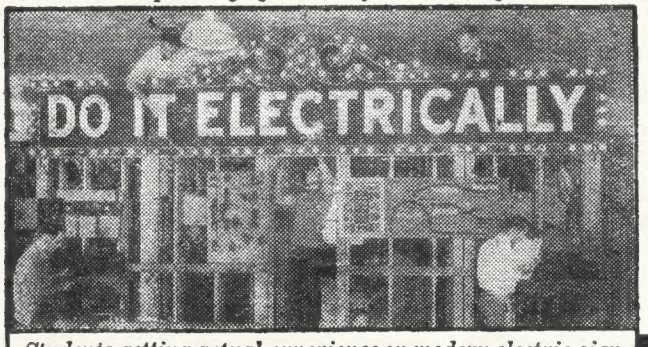
Without Lessons In 90 Days

BY ACTUAL WORK

GREAT COYNE

Students working in our Alternating Current Department

Instructor explaining operation of modern airplane motor



Students getting actual experience on modern electric sign

Don't spend your life in a dull, hopeless job! Don't be satisfied with a mere $30 or $40 a week! **You don't have to!** Electricity pays salaries of $60, $70 and even $200 a week to thousands of fellows no smarter than you. **And you can learn Electricity at Coyne in 90 days —NOT BY CORRESPONDENCE, but by actual electrical work.**

GOLDEN OPPORTUNITIES

PAYING $60 a Week and Up!

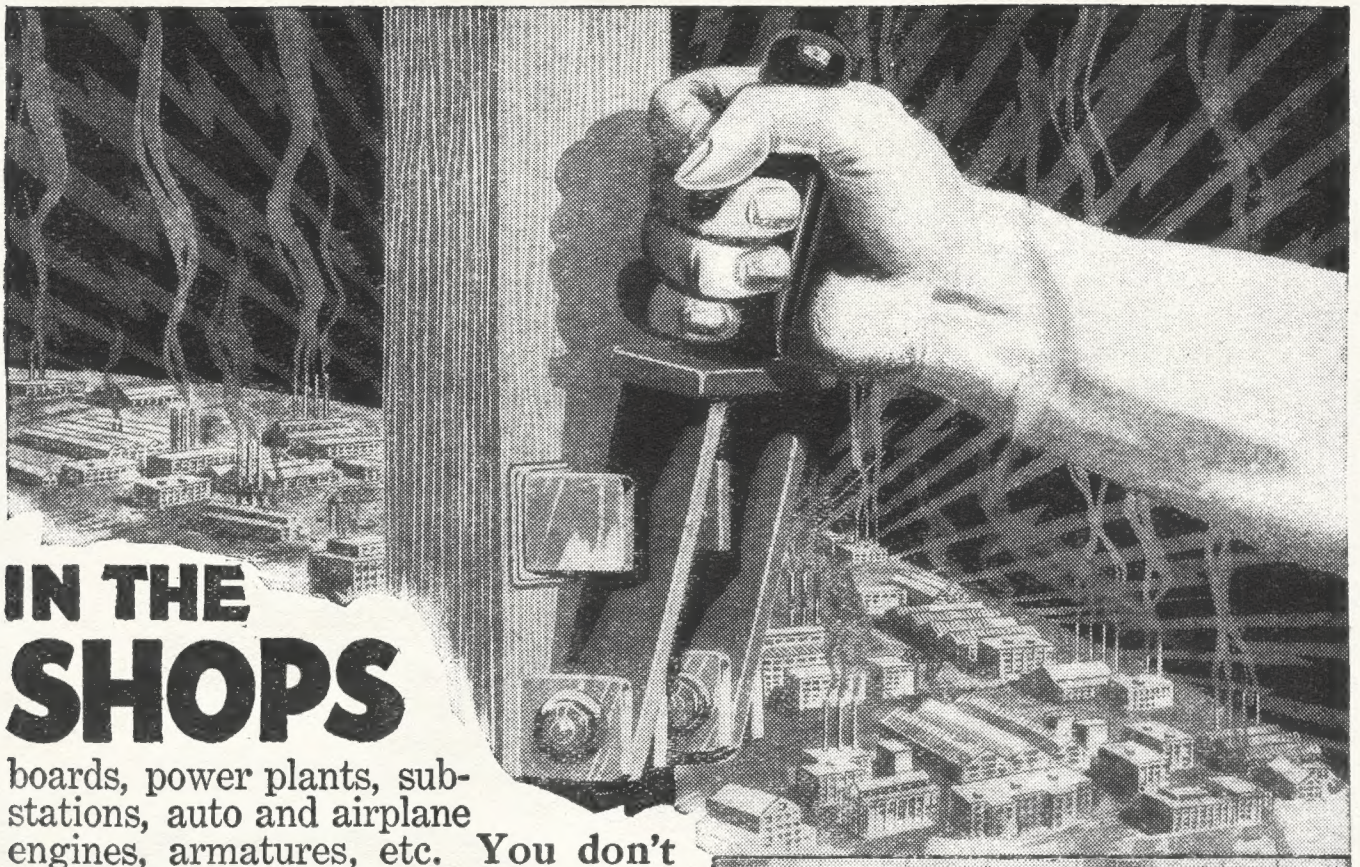
In Power Plant work, Armature Winding, Auto Ignition, House Wiring, Radio Service, Refrigeration, Welding, Aviation Electricity, Illumination, etc. **Thousands of Big Pay Opportunities for the Trained Man.** And you can prepare for one of them in 90 days at Coyne!

No Books - No Lessons

Coyne is not a Correspondence School. We train you by actual electrical work—on huge motors and generators, switch-

H. C. LEWIS
President Founded 1899
COYNE
500 South Paulina Street,

MAIL COUPON FOR



IN THE SHOPS

boards, power plants, substations, auto and airplane engines, armatures, etc. **You don't need advanced education or previous experience.** Coyne has been placing men in Electrical Jobs since 1899. Let Coyne help YOU to a good electrical position!

Free Employment Service
EARN AS YOU LEARN

My Employment Department gives you a FREE lifetime Service. And if you need part-time work while at school to help pay expenses, we'll gladly help you get it.

GET MY BIG FREE BOOK

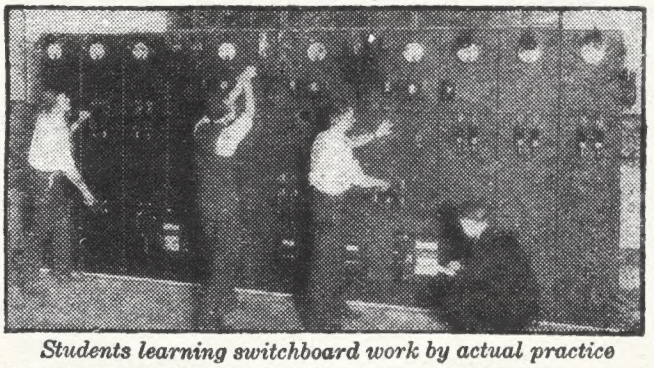
But get the PROOF! Mail the coupon below for my BIG FREE BOOK—telling all about jobs, salaries, opportunities. Find out about my free Radio Service, Auto & Aviation Electricity offers. **This costs you nothing and does not obligate you in any way. Just Mail the Coupon!**

Electrical School

Dept. 51-02 **CHICAGO, ILL.**

MY FREE BOOK→

Students working on a large synchronous Converter



Students learning switchboard work by actual practice

H. C. LEWIS, President
COYNE ELECTRICAL SCHOOL, Dept. 51-02
500 S. Paulina St., Chicago, Ill.

Gentlemen: Please send me your big Free Electrical Book with 151 illustrations. This does not obligate me.

Name.....

Address .....

City.....*State*.....

JULES VERNE'S TOMBSTONE AT AMIENS PORTRAYING HIS IMMORTALITY

AMAZING STORIES

Scientific Fiction

Vol. 6 May, 1931 No. 2

In Our Next Issue

THE INCREDIBLE FORMULA, by Paul Ernst. Life, very obviously, is somewhat more than a mere function of bodily organs. For ages man has attempted to emulate nature in the creation of life, but has thus far failed pretty miserably. If he should finally succeed some day in prolonging life, or even, with the use of remarkable formulas, in restoring the action of the heart, which is supposed to be the seat of life, what then? But the problem of life goes deeper than this.

THE TIME FLIGHT, by Miles J. Breuer, M.D. "Anything that the human mind determines upon with sufficient intensity *can be done.*" With that thought deeply impressed upon his mind, our very young scientist in this story does the seemingly impossible. All his scientific problems seem almost to solve themselves. And thanks to Dr. Breuer's ability as a writer, these problems become just as simple to the reader.

THE POWER PLANET, by Murray Leinster. The best way we knew of to answer the many questions as to why we did not publish another story by Murray Leinster, was to publish one. We are glad to announce that we will do so in the June issue. And this is no mean story. It is one of Mr. Leinster's best.

THE BEAUTIFUL BACILLUS, by Patrick Dutton. Bacilli are exceedingly interesting forms of life to study through the microscope. But too much success with experimenting with them has its grave dangers . . . as witness what happens to Professors Polen and Glissop in this story.

ACROSS THE VOID, by Leslie F. Stone. (A Serial in Three Parts) Part III. The concluding chapters are most absorbing and fast-moving in their account of the adventurers of our friends from Abrui on the Planet Kal, inhabited by the beautiful Butterfly-like creatures.

Other unusual scientific fiction.

In Our May Issue

Through the Vibrations
By P. Schuyler Miller 102
Illustrated by Paul

The Cerebral Library
By David H. Keller, M.D. 116
Illustrated by Morey

The Radio Detective
By Lincoln S. Colby 125
Illustrated by Morey

What Do You Know?
(*Science Questionnaire*) 129

Beings from the Boundless Blue
By Walter Kateley 130
Illustrated by Morey

Across the Void
By Leslie F. Stone 142
(*A Serial in Three Parts*) *Part II*
Illustrated by Wesso

The Great Catastrophe of 2947
By Woods Peters 146
Illustrated by Morey

A Voice from the Ether
By L. A. Eshbach 174
Illustrated by Morey

The Cover

of this issue presents a scene from the story entitled, "The Great Catastrophe of 2947," by Woods Peters, in which the inimical intra-terrestrial beings issue forth from the volcano, preparatory to making another raid in the vicinity of Kilauea.

Cover Illustration by MOREY

Published Monthly by **Radio-Science Publications, Inc.,** ***Jamaica, N. Y.***

OFFICERS

W. Z. Shafer, ***President***
G. L. Harrington, ***Vice President***
Laurence A. Smith, ***Treasurer***
Byrd D. Wise, ***Secretary***

EDITORIAL AND EXECUTIVE OFFICES
381 FOURTH AVENUE, NEW YORK CITY, N. Y.

Entered as second class matter at the Post Office at Jamaica, N. Y., under the act of March 3, 1879. Copyright, 1931, by Radio-Science Publications, Inc. All rights reserved. Title Registered at the U. S. Patent Office. Printed in the United States of America. The contents of this magazine must not be reproduced without permission. We cannot be responsible for lost manuscripts, although every care is taken for their safety.

25c a Copy, $2.50 a year, $3.00 in Canada, $3.50 in Foreign Countries. Subscribers are notified that change of address must reach us five weeks in advance of the next day of issue.

VOLUME 6

AMAZING STORIES

THE MAGAZINE OF SCIENTIFICTION

MAY, 1931 No. 2

T. O'CONOR SLOANE, Ph.D., *Editor*
MIRIAM BOURNE, *Managing Editor*
WILBUR C. WHITEHEAD, *Literary Editor*
C. A. BRANDT, *Literary Editor*
Editorial and General Offices: 381 Fourth Avenue, New York, N. Y.

Extravagant Fiction Today . . . . . Cold Fact Tomorrow

The Curved Earth

By T. O'Conor Sloane, Ph.D.

IT is a comfort to know, that living on this earth and with all our activities governed by its constants, we do not have to throw away our old-fashioned notions of what are curiously termed classic sciences, and that we can accept the accumulated wisdom of mankind and the phenomena on this earth as representing for us the truth. We can go peacefully on our way, holding that two parallel lines will never meet, that the sum of the three angles of a triangle of whatever shape is equal to two right angles and live in happiness without having to concern ourselves with what that strange entity space is doing with us. The two examples cited from geometry, the old-fashioned Euclidian science, has two separate natures as it may be put. The parallel line statement can be taken as axiomatic, that is to say, as something which is possibly unprovable, yet from the very obvious nature of this statement by that same quality is at once accepted as true by the mind.

The second one, about the triangle, is proved geometrically to be true and there is nothing axiomatic about it. Such propositions as these lie in the realm of plane geometry, geometry of a perfectly flat surface. The relativists, it sometimes seems to us have a fondness for bringing out the factors of their science, which seem to contradict common sense. They are all based on higher mathematics and refer in part to the phenomena of space, which to them means cosmic space, in which our earth is a mere speck of dust. But curiously enough, while it may seem that plane geometry should prevail upon this earth, it does not always do so. An ordinary structure, such as a house, is bounded by planes. Each floor is a plane. It is all set and fixed by areas bounded by straight lines or by curves, as the case might be, but in all cases they are Euclidian and subject to the laws of Euclidian geometry.

The only way of fixing the limits of space in our minds, if there are such limits, is to conceive of it as bounded by a curve or curves, if it is bounded by anything. Once we have formed that conception and that nothing can go outside of it, we can see that a Euclidian straight line is only possible within restricted limits, because if it cannot pass the limits of space, then it has got to bend.

Curiously enough, this little speck of dust that we call the earth, gives us in one branch of absolutely classic science, that is to say, science that is not in the line of relativity, a most curious approach to the doctrine of curved space. This branch of science is termed spherical trigonometry.

All sorts of circles can be produced on a sphere by imagining it to be cut by a plane. If we cut a slice from an apple, we will get a circle, at least an approximate one, because, of course, the apple is not a true sphere. The size of the circle depends upon how near you get to passing your knife through the center. The plane through the center gives you the largest possible circle due to the sphere's intersection, and such circle is called in the language of spherical trigonometry, a great circle.

If we take any two points upon the surface of the earth, taking the earth as being a true sphere, which it practically is, the shortest distance connecting those two points on the surface of the earth must definitely be a crooked line, and it is proved to be such or better is an axiom in spherical trigonometry or geometry. It is proved geometrically to be the arc of a great circle. If a Sea Captain wanted to take his ship from New York to Plymouth, for instance, he should follow the arc of the great circle connecting those two places. This is used by the relativists as giving an illustration of the shortest distance between two points, being a crooked line. It is a good analogy. But it is only an illustration, because if we could tunnel through the earth and connect New York and Southampton by a perfectly straight tunnel, which would be the chord of the arc of the great circle, connecting the two cities, this tunnel would be far shorter than the course the Captain would have to take for his ship.

We now come to the triangle. A spherical triangle is bounded by segments of three great circles. One of its limits, if the arcs are infinitely short, is a point. The other limit, if each arc is 120 degrees in length, is equal to four right angles, all of which is a great contradiction on its space to the law of the plane triangle. Thus, the earth's equator, can be taken as a spherical triangle, the sum of whose angles are 360 degrees. Here again we appear to be in contradiction with plane geometry.

So it appears, curiously enough, that our earth would seem to have an inclination towards relativity. Yet here we can find a flaw. The angles of a spherical triangle are the angles of the intersections of planes determined by the angles between such planes based upon the angles between lines drawn from the same point of the planes' intersection, and each line perpendicular to the intersection. But if cutting loose from great circles, we connect the three points of a spherical triangle by straight lines which will be chords of the three arcs, we would get back to the plane triangle.

It certainly is a comfort to feel that education in science and the institutions of learning of this earth are not interfered with from the practical standpoint, at least. Relativity has done some marvelous things, but there is a sort of feeling about it that it is in a state of flux and change. It has provided a reason for various phenomena of the world of astronomy, but here on our little bit of cosmic dust, as we have already termed the earth, old-fashioned or classic plane geometry will take care of our building operations, with, as a supplement, various curves, usually arcs of circles.

Then, for traveling over the surface of this sphere of ours, we find ourselves operating on a spherically curved surface for great distances, so that we approach at some slight degree to the laws of relativity. To one educated and brought up in the old science, the apparent contradictions of relativity seem very strange, but as we have seen in spherical geometry, and spherical trigonometry, we have there a sort of contradiction, at least on the surface, of the theorems of plane geometry. We all know that a light-mile is an inconceivably great distance as far as our intellects are concerned, but the stars are hundreds of light miles away from us and in this great cosmos it would seem as if the laws of old-time science were bent out of their course. But it is good to feel that changes in these laws only slightly effect us.

"The effect of the entire mass was indescribably wonderful. And there was another city, a city that was to this as the Taj Mahal to Notre Dame."

Through *the* Vibrations

By P. Schuyler Miller

TALES of the lost Atlantis have been many, as have been the serious researches by eminent scientists of today, for the solution of the mystery that surrounds the supposedly submerged island west of the Pillars of Hercules. The effort to solve the mystery—both in fiction and in science—will probably be just as captivating many years from now, until the riddle is solved—if it ever will be—as it is today. Even now a well-known scientist—according to the New York Times of February 19th—announces that he will soon be ready to publish his findings about the supposed descendants of the inhabitants of the sunken city. "Through the Vibrations" is an absorbing story dealing with the lost Atlantis.

Illustrated by PAUL

"ON the other hand," he continued, "if I am wrong, well, then——"

"Then I am out of luck," I finished for him.

"Exactly," he agreed. "You may be able to return safely to our own system, but even then, you may materialize within some object, or in space, and so be crushed or frozen. Or you may do the same there, even if I am right. You are certainly taking a great chance, if you decide to go!"

"You can't phase me, Doc! I'm on! And I'm going first, no one will miss me."

About three years before my decision, as recorded above, I found myself with a college diploma and no job. Apparently nobody would trust the ability of an "infant prodigy" who had his B.S. at nineteen. So it was that I was practically on my last legs when Dr. Alexander Gregory, usually known as "Doc," came to board at the farm where I was filling in for a few days while the hay-loader was out of commission. He had sympathy as well as money, and Christmas of that year found me installed as personal assistant in his private laboratories at Schenectady, where he cooperated with the General Electric Company, patrons of Steinmetz, Langmuir, Coolidge, and so many of the greatest scientists of the twentieth century.

About noon on the day of which I am speaking, he called me into his "holy of holies," where he had been working since long before I met him, on some project unknown even to me, who had come to be closest to him in every other task.

"Jack," he broke out, "we will grant the existence of an ether."

"With pleasure," I grinned.

"There is something there that carries light and the rest of the vibrations as air carries sound, or rather, as a wave is carried in a long, taut wire or a string, for light waves are transverse rather than longitudinal vibrations. What it is, we don't know. It may be a substance, it may be another vibration, it may be—geometry—as some believe, but it's there, at least so far as our minds can fathom. Most men call it ether. That's good enough for me."

"Suits me, too, Doc. I won't argue the point."

"Light, heat, radio waves, X-rays, all are transverse waves in ether, or have the properties of such waves. You know that. Any fool does, or should. What is more, matter is a vibration too. The electrons and protons, or, more probably, the sub-electrons and sub-protons, if they exist, are little foci of infinitesimal waves, ether waves, so tiny that they seem solid. We are not really sure that it is so, we can never be, I believe, for we can not see them, but electrons behave as if it were, and I don't care very much, so long as I can do what I want with them. Who cares whether his candy is flavored with natural wintergreen, so long as it tastes as he expects it to? I can make matter act as it would, if it were built up of tiny waves, and practically that is as much as I care to know. So let us call them waves.

"In our plane, our system I call it, we can see waves with frequencies of from 370 million million to 770 million million—roughly, from the deepest red to the darkest violet. The infra-red waves, the heat radiations, extend from 370 million million down to 950 thousand million. The ultra-violet runs from the visible violet up to about 6 million million million. Farther yet are

the X-rays, in the region about 3000 million million million million. And somewhere beyond lies our fundamental, our "matter-wave." Why, if we were to take the diameter of an electron for a wavelength, which I am perfectly sure it is not, the resultant frequency would be approximately 75 heptillions—seventy-five with twenty-one zeros following along after it. And the actual frequency must be greater, far greater than that! But you know all that. I have been talking as if you were some tabloid reporter.

"Of what lies beyond we know nothing, have known nothing. For years I have hoped to explore the gaps on either side of our fundamental. Now I believe that I have succeeded, that I can cause our matter-units, whatever they may be, to vibrate in resonance with any frequency desired. You, Jack, could be a blob of green light or a bunch of radio waves, probably static, if you wanted to. Yet, because of the relativity of the universe, you would note no difference in yourself. If I were to step you down four hundred trillion vibrations or so a second, those gorgeous lavender suspenders and your sage knickers would be all I could see of you. But I could feel the heat radiated by your blue eyes and your socks. That red apple on the table would be the color of a grape to you. The grapes themselves might sunburn you with their ultra-violet radiation. And, to yourself, you would remain the same as ever, trousers, suspenders, and all. What is more, if there chanced to be another system whose fundamental, whose 'matter-wave' coincided with your own, you could perceive it, you would be a part of it, while to me it remained invisible.

"It is my theory, my hope, that the characteristics of true space are absolute, that wherever in our system space has so focused matter as to form the suns and the planets, all the myriad bodies of the many universes, it will focus in a similar manner the matter-waves of every plane. No natural law holds unmodified by circumstance, and I do not mean that in these other planes there will be a pebble where there is one here, or a duplicate of yourself in relatively the same position that you occupy, for, to my mind, such a situation would be absurd and even impossible. The generalities will be the same, a sun for a sun, perhaps a planet for a planet, but the lesser details will be almost inevitably different. If it is as I think, Jack, you, and later I, may don the suit that I have prepared, strap the little box containing the reasonator to your waist, set the dials, press a button, and step off. We *will* do it!

"On the other hand, if I am wrong, well, then——

"Then I am out of luck."

Our plans were soon made. I, with the ray-proof suit, impervious to the dangerous radiations, with the tiny, compact and delicate resonator, and with a second powerful beam resonator which would "step up" objects at a distance of as much as a kilometer, would go ahead. If I found any system where I could stop safely, I would accordingly do so, and send back to the laboratory, with the aid of my beam resonator, a platinum plate, engraved with the readings of my various dials. Then Doc, instructing the other lab assistants, would send on such equipment as I might need, following it in person.

If, however, I could find no landing place, I was to continue through the vibrations until I was visible to Doc as a blob of yellow, then stop. If luck was with me, and I was able to hang relatively motionless in space, Doc could focus his own beam resonator on me and send me back to our own fundamental, providing, of course, that my resonator and other instruments would not work in reverse, and that the earth and, indeed, all the universe, did not whisk itself away into space when I stopped. Heaven help me if I should be refracted, though I should probably be light of a single color.

AT last the day set for the experiment came. Full details of past work and of the experiment itself were carefully stowed away in the vaults. Arrangements for the future, in case either or both of us should not return, were made. The chief assistants were instructed as to our system of signals, and how to reply to them with the aid of the spare beam resonator that we left behind. Finally, the very few scientists who could be persuaded to come were assembled, with suitable representatives of the press and the movies. It was to be decidedly a gala occasion!

At last the hour arrived, Zero Hour as it was called in France. Dressed in my insulated, ray-proof space suit, with its great quartz globe of a head, covered with insulating shutters and armed with periscopic televisors, its instrument belt, where hung a bewildering array of boxes, dials, projectors, and control leads, and its pressure control and air-renewer, I sat in an easy chair before the half-circle of obvious skeptics. Doc stood beside me, his hand on my shoulder, explaining the apparatus.

He was finished. For a moment he gripped my shoulder, then released me and nodded. Even as they disappeared, I could see the faces of the scientists take on an expression of incredulity and wonder. Then they were gone, leaving fading bodies that suddenly winked out. A negro, Doc's chauffeur, lasted longest, passing through intermediate red-green shades, indescribably weird, into an intense red, very dark, then slowly fading into a shimmering phantom that vanished almost immediately. Then a flashing, changing panorama of myriad vivid colors and marvelous combinations, rich, beautiful beyond imagination, a formless mass of dazzling, leaping flame that filled all the empty heavens with its wondrous glory. And then—darkness. I had entered a region of no vibration.

For a moment I was panic-stricken. I was lost, hopelessly lost in eternal darkness, unable to see my dials and instruments, speeding endlessly through the unknown! It was the end! Never again would I see old earth, my own little speck in endlessness. Never again would I feel Doc's fond grip on my shoulder, see the flash of black Tom's ivory teeth, handle the loved familiar instruments, gaze through the powerful microscope at the endless crystalline forms showing so clearly in the blazing light of——

I flushed and grinned sheepishly. Here were the lamps at my forehead and wrists, ready to flash into instant light, real, visible, white light from a source independent of outside vibration. Of course Doc had prepared for such an emergency! I puckered my lips to form the whistle that would send them flashing into luminescence, then halted as other light burst on me, first glorious purple, then sapphire, emerald, all the colors of the spectrum, leaping, playing, and—taking shape! I slowed down, released my death-grip on the control, stopped, and awkwardly scrambling, shot upwards.

I was floating, helpless in my air-distended suit, in

a pool of deep green, steaming liquid. I floated about as high as I would have at home, in the sea. And sure enough, water it was. Above me, in the misty heavens, shone a great ball of green flame, filling nearly a quarter of the dome of the blue-green, a monster sun. More I could not see, for the quartz globe that held my head had sunk deeper than the rest, and was almost entirely submerged. Putting my hand to my belt, I felt for the button that controlled the periscope, found it; raised my "extra eye" into position. Sure enough, there was land near me, steep clay banks, a great level platform of deep purple crystal, and above, showing at the summit of the red clay cliffs—grass.

Madly I paddled to the shore, puffing and floundering like a walrus, and climbed out on the amethyst platform, for such it was. The clay banks were too steep for me to climb alone, so, taking out my tools and platinum plate from the water-tight compartment in my belt, I set to work. Unthinking I had unscrewed the globe from my head, a truly rash thing to do, for I had not consulted the atmosphere analyser dials, so great was the feeling that I was merely in some unexplored corner of Earth. Luck was with me, however, for the air was safe. It was denser than our own air, with a good deal more carbon dioxide and oxygen, and less nitrogen, but decidedly breathable. So, inscribing my dial readings and a rough map of my locality, with a few brief explanatory words, I laid it in the middle of the crystal platform, set the control dial of my beam resonator, and pressed the trigger-button. The platinum, and part of the platform disappeared almost instantly, with a faint bluish glow caused by fluorescence of the abnormally excited atoms. Doc told me later that they materialized beneath the chair of one of the doubting Thomases, old Barnes, upsetting that grouchy and self-righteous individual both physically and mentally. Fortunately, the beam had penetrated into the amethyst a little deeper than my original immersion, about ten feet, thus preventing any serious trouble in Doc's journey.

AS soon as he had read my message, he began to alter his plans to fit the conditions that I reported. All the supplies were enclosed in a sealed metal cylinder and projected from my former position; then, standing upon the amethyst pillar that protruded from the crumpled concrete of the laboratory floor, he "stepped off" himself.

Meanwhile I was trying to gouge enough steps in the red clay walls of my prison so that I might take a look at the hidden outside world, but vainly, for the clay very naturally crumbled as soon as I put any weight on it. Suddenly a metal cylinder popped to the surface of the quiet green pool, and a second later Doc, traveling a good deal slower than I had, appeared in a manner befitting the renowned Cheshire cat, on the spot where a moment before had been an elliptical hole in the crystal. He grinned, waved an insulated mitten, and began to unscrew his helmet, looking around him as he worked.

"Where do we go from here, and how, Professor?" he asked, removing the great globe from his head.

"Search me," I answered. "You won't find any ladder in my pocket."

"Well, let's try mine. Where the deuce is my pocketbook? Oh, there it is," pointing to the cylinder, "I must have dropped it. Here Fido!" He whistled sharply.

Sure enough, the cylinder began to hurry through the water toward us. It was uncanny, even though I knew that there was a motor and propeller in each end, keyed to different notes.

Hauling the heavy cylinder up on our natural pier, we opened it. I was anxious to see what Doc had sent. First out were a pair of individual flyers, with helicopter and pusher attachments. One strapped the apparatus to his waist and shoulders, ran his fingers over the rather complex keyboard, and flew. They were one of the greatest productions of the century. These, unlike most of the commoner types, could be run either by the usual power beam or by individual power plants, with extremely compact storage batteries of the latest sort.

In addition, there were photographic equipment, condensed food, binoculars, compact sending and receiving sets for communication in case we became separated, projector pistols for either explosive bullets or short-circuiting rays, and, most important of all, a small power generator and transmitter, working by solar radiation. This, once set up and in order, would insure our power for flying so long as it went unharmed by outside agencies.

Doc had been taking in his surroundings while I unpacked and set up the generator. Suddenly he turned to me and spoke.

"Jack! Do you notice anything out of the ordinary?"

"Plenty!" I replied. "Who ever saw an amethyst this size, water of that color, or a great green sun like that?"

"I mean, aside from that?"

"Why no, I can't say that I do, Doc. What's up?"

"Maybe it's just my imagination, but—isn't it a wee bit cool for a sun of that size?"

"By Jove, so it is! Doesn't that mean——"

"That there is very little infra-red radiation. Exactly. Give me the binoculars, the ones with the analysers." Setting the radiation screens, he focused them on the sun. Then, twirling the selection disk slowly, he gave me the readings, which I scratched on the clay. Sure enough, infra-red radiation amounted to less than half that of our own sun; blue, yellow, and green predominated, while the ultra-violet was exceptionally strong.

"We're in for a siege of sunburn," I remarked.

"Rather. I'm glad I brought that skin-wash. Here, sponge yourself with that, wear your goggles, and you'll be O. K."

"Thanks. I was afraid I'd look like a boiled lobster before long."

"Not now. Of course you'll tan, but you won't burn, and your eyes are protected. I'm glad that this generator doesn't depend entirely upon infra-red radiation, though I suppose we could step up the colors if we had to. Got it assembled yet? Good. We can leave it here, where we ought to be able to find it without difficulty, and where it is most likely to be safe. Start it now; I have our packs all ready."

I ran up the projector arm until it cleared the walls of the pit, anchored the machine firmly to both pier and bank, and shoved over the lever. Immediately we heard the gentle, characteristic purr of the whirling mirrors, and the familiar green haze, hard to see in the light of the green sun, arose from the generator box. Then the projector arm began to spin, its drone rising to a thin whine, and to throw off little wreathes of tiny, pale violet sparks. Doc and I climbed into the harness of the flyers and then, Doc leading, we rose above the walls of the clay pit.

It was a strange landscape that lay before us. Behind, the green grass, long and heavy, with here and there a patch of huge green-white flowers resembling clover, gently rose to the base of a great, jet-black cliff some ten or fifteen miles away. In the binocular flying-goggles its pillar-like formation was plain. Before us, the same grassy meadow stretched for miles and miles into the distance, to meet the oily waters of a smooth green sea, so calm as to be mistaken for part of the level plain. Everywhere rose clusters of deep purple crystals, as big and bigger than that of the pit, with here and there a single huge white one, or, rather, a more or less transparent one, that loomed like an obelisk against the green sky and the green sun. At their bases were the red clay pits, eroded by the tiny rills that wandered from the base of the black cliffs down between crimson banks of clay to the glassy waters of the sea or to one or another of the pits.

Still another thing struck us simultaneously. Despite the apparent size of the world on whose surface we stood, or, rather, in whose atmosphere we floated, the force of gravity was very little greater than on earth. In the pit, we had walked about freely, with approximately the effort of one who wades knee-deep in water. Yet, as we could plainly see, the horizon was a good deal farther away than it would be on earth. There were, of course, several explanations. We might be on a large world of low density. We might be on a hollow planet. This world may have been flattened out more than the earth, into the form of an onion. And we might be at the pole of a world approximately earth-size.

The last explanation was soon ruled out, however, for while we were still engaged in exploring the long slope below the cliffs, the sun sank into the sea, and myriad stars began to appear, apparently more numerous as well as brighter than in our own system. Indeed, the heavens fairly blazed with white light, a great relief after the green glare of day. Here and there were great red and blue and yellow globes, shining against the white. We saw no other green suns, nor could we detect a satellite, but it was strikingly in support of Doc's theories to note that aside from the greater visibility of most of the stars, which changed the appearance of the heavens greatly, the familiar arrangements of the constellations were all apparent as at home, though most of the colors had changed. Willingly we returned to where the violet sparks of the projector showed low above the grassy slope, to wait beside the cylinder for the morrow.

THE night was long, nearly twice the length of an earth night, and we later found that the day was correspondingly short, showing that the season was far advanced as on earth, but as a whole the period of rotation of this planet was greater by nearly half than our own. During the night, which we spent star-gazing and planning, we thought that we noticed a sort of reddish glow above the distant cliffs, but we were content to leave further exploration until the morrow. When the sun appeared, we were ready. Rising once more from our pit, we sped to the foot of the cliffs, then rose vertically, parallel to their face.

At last we topped the great jet rampart, over a mile in height, and gazed out over the bare surface of the smooth, flat plain, leveled as if by artificial means, where no vegetation grew, no crystal jutted, no pit sank, only that hard, smooth surface stretching endlessly away into the distance. It was like some great pillar of rock pushed up from the nether-world into the light of day, unruffled, cold and cruel, hard as only the compressed rock of a world heart can be. Yet the plain was, in truth, not entirely level, not totally unruffled. Far away, at the limit of the gaze, loomed an angular black mass. We sped toward it over the pitiless surface of the plateau. It grew, bulked huge, and towered above us.

It was a city, a great, black, towering city of the plateau. In twenty great terraces, each a hundred feet in height, it towered nearly half a mile above the plain. The base was square, perhaps a mile on a side, and in the center of each side, flanked by a pair of huge tapering amethyst obelisks, was a gate. Other opening in the sides of the lower terrace there was none, but in the higher ones were circular ports, twenty or thirty feet in diameter, placed midway of each wall, one facing each point of the compass. And atop the highest terrace, at the very summit of the gigantic pile, perched on the needle-tip of a great black cone, was a mighty crystal globe, glinting coldly in the glare of the sun.

We floated close to the nearest gate, a peaked half-oval of deepest green, so dark as to be nearly black. Indeed, we looked a second time at the rock of the walls and of the plain to see if they, too, were not of the same color as the gates, but they were black, the same glossy jet. The green of the gate was unbroken, except for the very center, where a pale blue ellipse, seemingly of metal, glowed. It seemed to radiate light of its own, but it was cold to the touch, deathly cold. And around its rim, as around the edge of the gate, ran a ribbon of pure soft gold, worked and tooled into millions of delicate geometric weavings.

The wall itself, as we viewed it closely, showed no joint, no sign of block or mortise. It seemed carved from the plateau as one might carve a shrine from the rock of a granite mountain. And over every square inch of its surface ran the twining lines of the delicate geometric filigree, a veritable maze of lines and angles and arcs in low relief, incredibly fine, and in very obvious order, in fixed relation to one another, though we could detect no repetition. Always there was some tiny variation in form that broke the monotony and made phantasy. It was truly wonderful, and strangely beautiful.

At last we left it, forced by the passing of time to continue our exploration. We rose above the floor of the first terrace, level and smooth as the plain itself, and advanced over the black seamless paving to the wall of the second terrace, and the gold-rimmed opening. It was closed with a disk of transparent crystal, through which we could dimly see the black cylinder of the corridor stretching unbroken into the darkness. Far away, practically invisible, a faint crimson glow seemed to bathe the jetty walls, though we could not be sure of it.

Toward the end of the day, as the great green sun was sinking low, we approached the slender conical spire at the summit of the city. It was of the same hard, black rock as the walls of the pile below it, the mighty close-barred edifice that it crowned. But it was smooth, from the spreading base that covered nearly half the topmost terrace to the needle-point two hundred feet above. And yet a dozen feet above its tip, floating in nothingness, hung the sphere.

It was of crystal, perhaps fifty feet in diameter, floating immobile above the tip of the city. The crystal was colorless, transparent and flawless, yet in its very heart

we sensed a slightest hint of rosy opalescence, incredibly lovely after the harsh black of the walls and the pitiless green glare of the sun. Even as we watched, it seemed to deepen, to permeate all the interior of the sphere. Then, while the great sun sank into the oily sea beyond the cliffs, its rose-glory burst into full bloom, a great gem of pulsing, star-flecked crimson flame, that bathed all the cold harsh terraces of the city with soft ruby light. Alarmed, we flew back into the darkness beyond its range. And as we withdrew, there rose from the ball of light a delicate pencil of lavender flame, a finger of rose-blue that pointed up to the blazing heavens. It leapt up and up, faded, waxed, pulsed and grew still. Then it began to sing, a thin, ethereal piping that shrilled loud yet faint at the farthest limit of our senses. And as it sang, the disks of crystal that barred the portals sank back into their recesses, and then disappeared in the veiling darkness. The gates of the city had opened.

For a while we watched expectantly, waiting for the inhabitants of the colossal pile to come forth. Then, as nothing happened, we flew cautiously toward the nearest portal. Suddenly we were sucked into a rushing current of air that swept us irresistibly into the black throat of the circular corridor. We were whipped through the gaping opening, sucked down between the endless shining walls, then suddenly hurled back into the open air, where we managed to escape the flow of the current, hot now, where before it had been cool. For some time we watched, puzzling, then Doc motioned to me to come over to where he was hovering. He pointed down the long corridor to a point, dimly lit by the reddish glow, where it branched into three. The central opening and the one on the left were closed with disks of crystal. From the right hand opening rushed the river of air. As we watched, a crystal disk sprang across its mouth, while the corridor to the left flew open, sucking in a torrent of night air. We dropped from level to level, alternately attracted and repelled by the floods of air. Everywhere were the three branching corridors with their crystal valves, though near the bottom we could not see them, for the corridors were too long. Above the keening of the flame and the wailing of the eddying winds, Doc shouted in my ear.

"The thing is breathing!" he yelled.

I looked at him aghast. "Is that alive?" I asked.

"No, no. It's some sort of a machine, a ventilating system for the city and for whatever is below. The planet must be hollow. There are probably hundreds or thousands of these, sucking in fresh air and blowing out the stale, whenever night comes. The flame is a signal. It opens the valves with a certain note, just as we whistle for our lights, or as I called the cylinder. How it is produced I can't even guess, perhaps by some electrical phenomenon, but that is what it's for. Here, lay our fingers against the wall. Feel it?"

I obeyed. Sure enough, I could faintly feel the throb, throb, throb of great pumps sucking in the life-giving air, belching forth the impure. A sudden thought came to me.

"Doc!" I shouted. "They must be like us, they breathe!"

Doc shook his head. "Not at all," he replied. "They may eat it, as men once believed the chameleon did. They may extract certain gases for fuel in their machines, or whatever they use. They may use it in pneumatic tubes. It's probable that they do anything but breathe it. We are really freaks of nature, we men. You know that, Jack. The things below may not even be organic. I doubt if they are."

We were silent for a moment, then: "Doc!"

"Yes?"

"Are we going in there? To see what—they look like?"

"It is our duty as scientists, Jack."

"I know, but is there any good in going? Won't it be just useless?"

"Nothing is useless, Jack. You should know that by now."

"Yes, I suppose so. But aren't we likely to be trapped? What good could we do the world then? And how can we get in anyway? Those middle valves are closed."

"Don't forget, we have our resonators. If we get in a tight place, we can use them. As to getting in, don't you remember the glow which we thought we saw during the day? I think that central valve is open in the daytime. We'll go in in the morning, as soon as the pumps stop, and wait for it to open."

"I'm game. How long before we start?"

"Nearly twelve hours, I think. You know, the nights are twice as long as on our own planet. Let's go back and take forty winks or so and a bite to eat. We may need it. And we'll have to wear our helmets, or at least, take them along, for we may have to use the resonators."

"All O. K. with me, Doc. A bit of food won't displease me at all."

AT full speed we returned to the pit, and made our final preparations.

Two hours before dawn, Doc's electric alarm-clock awoke us with a slight shock. Screwing on the globes, and overhauling the generator, we set out, each with a good sized pack. The light was just fading from the sphere as we flew post haste into the topmost opening. Behind us, the crystal disk clashed shut, barring the exit. Ahead, the short dark corridor extended as far as the threefold parting, where the central valve was slowly opening. Cautiously we flew to it, passed through, and looked down.

We gazed into a deep, smooth-walled shaft seemingly burned out of the black rock of the plateau, so smooth was its bore. For miles it extended below us, down into the heart of the planet. And somewhere, down there in the depths of the shaft, was the source of the rose-glory that flooded all its smooth cylinder of black with coral and crimson, revealing the branching corridors of the ventilating plant, and lower a broad inclined plane that ran from the level of the plateau, the level of the great green gates, down into the roseate mist below.

"They must walk, as we do," I yelled to Doc.

"Um. Maybe. But you needn't yell. Use the 'phone. Come on."

He vaulted over the low railing that closed the end of the corridor, and, his helicopter whirring to break the fall, drifted rapidly down past the black corridor openings. I dove after him, bringing up with a jerk just above his head, and we floated down together.

At the plateau level we halted, and entered the corridor that led to the north gate. Straight to the great green slab it ran, dark and polished, its level floor thick with dust. No living creature, as we knew life, had

passed here for long years. Weird blue-green light came in through the pale oval and lit the desolate vestibule dimly. It had odd mechanisms in abundance.

"Automatic apparatus," Doc grunted. "They've left the outside for good, apparently, have no use for it, though it may be different somewhere else, at some other ventilator. I admit that this black desert isn't especially attractive."

"You're right," I agreed, "but we'll never find out about that if we stay up here in the attic. Let's go downstairs."

From the plateau level, the pit ran smooth and unmarred, except for the spiral plane. More than ever we gained the impression of a hole melted through black wax by a welding flame. Examination of the plane bore out this impression also, for at the edge nearest the wall it showed a decided jointure, as if it had been dovetailed into the wall after the pit was bored. Yet there were no visible joints in the plane itself. It was just another mystery, another paradox in this queer world.

For perhaps five miles the pit ran down, and for a major part of the time that we fell down its bore, the source of the rose-flame was visible through the mist. It filled the entire bottom of the pit, a great, still pool of fire, seemingly, yet one that gave no heat. And as we sank deeper and deeper into the crimson mist that filled the lower part of the shaft, there came a queer, half-familiar tingling in those parts of our body that were exposed. Following Doc's example, I drew on the long gauntlets that hung at my belt.

"What is it?" I asked.

"I can't tell," came the answer over the phone, "but there is some sort of radiation. We had best be careful."

"Could it be some sort of searchlight?"

"Possibly. It's apparently a mirror of some sort, but what it reflects, and why, I can't say. It must have something to do with the ventilator, though."

"Yes, that seems clear enough. Doc, why mightn't the sphere up there be some sort of light-sensitive cell that responds to a change in the intensity of this light and then controls the pumps by a sort of key-note, as we saw last night?"

"It sounds plausible enough, Jack, but why did that flame appear, and what made it sing? Maybe, though, that part of its radiation that isn't light has something to do with it. It is certainly beyond my experience."

"I'll say so! Let's put on a bit more speed. I'm anxious to see what the thing really is."

As we drew nearer to the bottom of the shaft, we could see that the seeming pool was indeed a huge parabolic reflector. Its surface was of a queer metal such as we had never before seen—apparently self-luminous, and capable of taking and retaining a high polish. Aside from its own radiance, it reflected the crimson light that poured from a large globe of the same metal, placed at its focus. This light-source was covered partially by a lead shutter, which revolved slowly, apparently in the same period as the planet itself, and controlled the strength of the radiation. It was akin to our own smaller searchlights and parabolic reflectors, but cleverer and better developed.

SO engrossed had we been with our examination that we had not noticed our surroundings. Now, looking up, we found that the mirror lay in a deep bronze bowl, firmly bolted to the rock, in which the pit terminated. Above us, halfway to the rim of the bowl, a narrow balcony ran around the sides of this giant's cup of light, on which the inclined plane ended. From it several small doors opened, as well as a greaet peaked gate of metal with the port of bluish transparent metal, such as the great gates of the ventilator had had. This stood half open, showing part of a jagged rocky ceiling that glowed faintly in crimson light that flooded up from below. And everywhere the dust lay thick.

I ran out on the broad balcony that surrounded the outside of the bowl. Great cables anchored the cup to the rock of the ceiling, built to withstand the fearful gales that must result when the powerful pumps of the ventilators drew the foul air from this hidden underworld and hurled back the pure air of the outer planet. No wonder the ventilators worked only at night, for were they to act during the day, any high-flying aircraft that the builders of this world possessed must surely be dashed against the rough ceiling unless they kept to the lower levels. It was remarkable to me that the gray dust should cling so long, even though the interior of the bowl was almost entirely sheltered from the wind. Leaning over the waist-high railing, I looked down at the city beneath, a real city this time, rising in a steep pyramid from the smooth rolling plain of the cavern floor—a city that we came to know very well in the weeks that followed.

From a wide zone of low, rather uninteresting buildings built on the level of the plain, the city rose in three terraces, each narrower than the preceding one, and each distinguished by more lavish and beautiful architecture than its lower neighbor. Four broad inclined planes led upward from great stone gates in the wall that surrounded the lowest zone, while raised runways, escalators, and, in a few cases, streets, made possible communication and transportation in each zone. A majority of these details, of course, we did not observe until much later, after we had been in the city for some time. Indeed, but for a moving picture we might never have learned that the very vitals of the city, its trunk lines, dynamos, and individual ventilators, were hidden in the heart of the mound, and attainable through only a few inconspicuous entrances.

Architecturally, the place was a puzzle. I might say, as Doc did, that it was like "nothing of Earth, yet like everything on Earth." For there was a certain indefinable unity in it all, despite the really glaring dissimilarities of its parts. The most obvious explanation, which we later found to be essentially true, was that each zone aligned a social class or caste, while each class was limited as to its style of architecture. The evident arrangement bore this out, and later information from the library confirmed practically all our theories.

The lowest zone was of squat cubicles, much like our own buildings but more regular, with no single curve. Nor was there any visible decoration, aside from that afforded by a few lateral bands of a blue pigment. The first wall, around the entire city, appeared to have been plated with brass, now sadly tarnished, while the gates, like, indeed, the gates of every level, were of the green stone, gold-rimmed, and set with the cold, blue ovals.

In the second zone, within a low wall, tin-plated, began the realm of the curve. Here the architecture was more familiar, more earthly. There were domes and circular windows, and every edge was rounded. Yet, in

general type, the cubicle prevailed. It was as though the citizens of the second zone adhered naturally to the style of the lower level, yet curved every possible angle to show that they *might* do so if they wished. We found later, from books, that this zone harbored the shops, and a few of the residences, of what we call the middle class, the tradesmen and professional men, who had ascended from the plebeian level of the first zone, the zone of the common laborers, by reason of their own intelligence and ability.

The last wall was truly beautiful. It was plated all over with a form of the radiant metal, so that it cast a faint rose tint upon the roofs of the second zone. And here the gates were all fretted with little geometric filigree-work, like the ventilator, inlaid with gold. The buildings themselves were clearly residences, beautiful mansions of fretted and carved marble, snowy-white, quite unlike the dull red sandstone and brick of the lower levels. No building but had its frieze or its bas-relief plaques set in the sides of the entry, while everywhere, in niches, on pedestals, or lining the pathways, where fountains played incessantly, were myriads of marble statues, groups as well as single figures, that were really miracles of skill and beauty.

This zone merged directly with the central mass, a single building of jet-black marble, shot with dull crimson. A narrow court surrounded it, in which were fountains of marble and life-size statues of solid gold, alternating. For a hundred feet there were no openings save the four mighty gates of open filigree. Then the entire building broke into a riot of intricate design—pinnacles, spires, minarets, arches, long festoons of conventional floral design, dripping with marble icicles, slender fretted pillars with elaborate capitals—a fairyland of orderly-disorderly wonder and beauty. It resembled, in a way, the great carven temples of Angkor and the other lost cities of Cambodia, yet this carving was not preeminently pictorial, nor yet so conventional as we see on Earth. And from its utmost peak extended a slim, pointed pinnacle, entirely formed from a vein of the blood-red marble. Above it floated a crystal sphere, like the sphere of the ventilator, that shed the same deep rose-glow, a glow that was mirrored at half-mile intervals about each terrace by lesser spheres, hovering above metal-work towers. The effect of the entire mass was indescribably wonderful. And there was another city, a city that was to this as the Taj Mahal to Notre Dame, a city that we saw only in part—. Perhaps it was well, after all, that we could not see it as it must have been, for even as things turned out, it has been hard never to return to that wonderful empire of a wonderful people. We have sworn, but perhaps some day even oaths will not hold us. Who knows?

So beautiful was the scene that lay before me, that some minutes passed before I realized the significance of what I saw. Indeed, we were a scant hundred feet from the upper terrace when I spoke.

"DOC," I cried, pointing to the statues, *"they're human!"*

"Yes," he said slowly, "they are human. It—well it upsets nearly everything that I thought I knew. I had believed that a type does not duplicate itself in the same relative plane of intelligence anywhere in our universe. Mathematics forbade it, or so I supposed. There would be the same broad, general types of life, perhaps a few new ones here and there, but the range of intelligence would be different, and developed along different lines, studying different phases of Life and Space and Time. I—sometimes I should have welcomed a world of—civilized—ants, or spiders, or even plants. I think I would have been welcome among them. All too many are the times when I have longed to be free of the petty bickerings of my fellow men, and to submerge myself in Science, in the knowledge and understanding of our great universe! But it seems that I was wrong. I had hoped that our God was not a jealous, selfish God, limiting understanding to a single race, but a truly great, truly scientific God, a beneficent God, who would see no race neglected, no cosmic permutation untried, who would not suffer repetition of old, primitive forms lest He lose the urge of the eternally better! And—I was wrong."

"But, Doc, maybe it's a mere coincidence, or something. And, after all, isn't it rather wonderful to find Man here?"

"I suppose it is, Jack. You're right. It was just a bit of a blow to my vanity to have my pet theory disproved. Come, we have our work to do. We have forgotten our purpose in coming here. We can't hang here all day. Let's land."

So we sank to the marble paving of an ancient garden, where fountains still played merrily, although the flowers and trees and even the people, the men like ourselves, who once trod there, had long since gone. All the terrace was thick with a fine, spore-like dust, showing no sign of footprint but our own. Our scuffling feet sent it up in thick gray clouds that swirled about our heads.

Doc had been examining the dust with a small but powerful lens from his belt set. Suddenly he sprang erect and cried "Quick, the helmet! Pure oxygen! For your life!"

I obeyed instantly, substituting the oxygen flask for the usual respirator. Doc had done likewise. I motioned to the radio connection, but he waved me aside and brushed the dust from the broad rim of one of the fountains. Taking from his emergency case a beef-culture, he set it in the cleared space, and dropped on it a tiny pinch of the dust. Then he moistened it with water and stood back.

The surface of the culture seemed to writhe. Almost instantly it became a mass of swelling, twisting tubercles and fleshy tentacles, vegetable tentacles. Inside of a minute's time a repulsive mass of fleshy monstrosities rose where the culture had been, great livid sacs of dull purple on the end of thick stems of angry carmine, thick slabs of a sickening bilious yellow covered with little pale blue warts, twisting arms and tentacles of a dead white, flat and lustreless—a veritable nightmare jungle of disgusting fungus growths. And even as we watched, it crumbled and melted away into a thin film of gray dust, gray spores. I shuddered and turned away. Then came Doc's voice in the 'phones.

"Fungii, but I suppose you knew that. They're not used to much oxygen, apparently, it's too much for them. They grow faster, but they burn themselves up, literally, go all to spores and ash. They need organic food, so it's good we didn't breathe many. Look."

The culture had totally disappeared.

"I guess that's what did for these people of the city, Jack. They couldn't escape it, not many of them. Perhaps there are a few, somewhere, but this dust seems

widespread, and we have seen no signs of living beings since we arrived."

"But how about the ventilator and the lights? There must be someone to run them. Maybe they're afraid. Maybe they're hiding from us."

"No. That argument won't hold. You have seen, are seeing, the realization of a great many Utopian visions. This is an automatic world! The nation has died, the race has died, so far as we know, on this planet, yet their cities and their ventilators, all the vast mechanism of their vast civilization lives on in mute witness of the power that made Man eternally master over the machine! It must have been a great civilization. God alone knows how long this under-world has gone on like this and how long it will go on. Presumably the mechanism will wear out some day, and all the great mechanical life of the planet will finally stop forever, but that day may not come for many years. I would that it might never come, were that possible! Come, let us go into the building there, and see what we can find. Perhaps we may find some clue to the history of the race there. It seems to have been a building of importance."

The north gates were open, and we advanced noiselessly down the smooth black corridor, with the malignant grey dust inches thick on the floor. For perhaps a hundred feet it ran, straight into the heart of the huge pile, smaller corridors branching off at regular intervals on either side. Then there was a second filigree gate, a gate of hardened gold, which rose in a groove at a touch on a small bronze lever. Later we found that the opening mechanism could be locked from the inside. Evidently the ancient priests did not entirely trust their congregations.

Beyond the door lay the wonderland of the temple. There was a great oval room, hollow roc's egg, rising to a rounded dome two hundred or two hundred and fifty feet above the smooth sea-green pavement, flecked with little golden motes. The black of the exterior did not show through, except in a breast high band that ran all around the great room. All of its mighty, smooth ovoid was of the snowiest of marbles, veined faintly with gold, with sea-green, and with the rosy metal. This last formed a veritable maze of fine veins in the very summit of the temple, filling all those dim upper spaces with its roseate mistiness.

Beautiful was the temple, but there was that in the center of the great hall that struck me literally speechless! In size it was larger than life, perhaps thirty feet from the smooth, cool greeness of the floor to the tip of the lifted trident, a wonderful, majestic figure, surely equal to the best of the work of the great sculptor, Phidias. There in the rose-glow, rising above the sea-green paving, it seemed alive and almost holy. Our voices, our very thoughts were hushed by its grand, awesome presence. Truly, I felt in that pagan temple more of true, great universal religion, necessary and inevitable as Time, than I have before, or since, in any house of worship on Earth. Doc, too, felt it, for I saw him half-stumble, then stiffen, head back, and—expand. But for the helmet I should have heard the awed hiss of his indrawn breath. I lowered my head, half disbelieving the evidence of my eyes, then looked again.

The level green of the floor rose smoothly up, twice a man's height, into a toppling foam-fretted peak, a great billowing wave of stone so nearly like sea-water that I half expected it to break and come thundering down, deluging us. From its highest crest, thrusting forth into the open air, sprang a triple team of winged horses, linked with thin gold chains to a golden chariot, half submerged in the breaking sea. Of spotless white marble they were, with manes and tails and half-furled, stretching wings of tooled gold, steeds of the very gods, freeing themselves from the clinging waters of Earth and coursing straight upward into heaven, into infinity. Never do I wish to see such horses again! I could not stand it.

In the chariot, one hand grasping loosely the golden reins, the other thrusting high in exultation a trident of gold, stood the colossal figure of a man, a god, as majestic and serene as the roses were, and like them filled with the spirit and exuberance of Life itself. His feet were spread wide apart, his massive limbs and chest with their rolling muscles were bared by the single snowy garment that swept back in the wind of his passing. His golden beard and long yellow locks of half-curled hair, whipped back in the tempest that gripped him, and against which he braced himself. And in his calm face and far-gazing eyes was, perhaps, a little of pity and of farewell, aside from the great pace and majesty and expectation.

Here and there, buried in the cresting wave, clinging to the smooth black form of dolphins, were white and gold forms, female forms, nereids bidding farewell to their master. There was sadness, great sadness in the faces turned toward that great central form, but there was also hope, hope and little of the vision, the expectation, that lay in the serene eyes of the sea-god, leaving his children, his kingdom, forever, answering the call of Olympus.

DOC'S helmet was off now, dropped and forgotten, as he stood before a tablet of the radiant metal that rose to the height of a man before the mighty group. I heard muttering, half to himself, half to me, to the world:

"'These be the laws of Poseidon, given unto the children of Atlas in the beginning, erected by His will in this, His temple, in Yzdral, first city of the Underworld, fifth city of Atlantis after the transformation by the wrath of Zeus! Look ye, O sons of Atlas, and obey!'"

He was silent, then "'After the transformation'. Well, queerer things have happened, but to think—! It—it's wonderful!" He turned half toward me: "Jack, do you know your Plato? Have you read the *'Timæus'* and what there is of the *'Critias'?"*

"No, Doc, I'm afraid I haven't. Technical students were not supposed to need much culture, in college. It was above them."

"I suppose so. It is usually so. But I am glad that I have my share of culture, even though they called me 'the A. B.' back in the old days. But you have heard of Atlantis?"

"Oh, certainly. But that's a fable, isn't it?"

"A good many men think not, Jack. I am one. And, Jack, it seems that we are right."

"What do you mean, Doc? Has this anything to do with Atlantis? How could it? I thought Atlantis was on Earth."

"Wait! Wait! Let me tell you what Plato, what history tells us, first. Then you may draw your own conclusions.

"According to Plato, in the *'Critias'* and part of the *'Timæus,'* there was an Atlantic Emprie, an island empire that extended from Egypt to 'the continent beyond the Western Sea'—America it would seem. Approximately eleven thousand years ago they waged war on an alliance of little Mediterranean states, and were defeated, somehow, despite their power. Shortly afterward the islands, where the capital was located, disappeared, swallowed by the sea, Plato says. In the *'Critias'* he meant to give the entire story in detail, but after a description of the island-continent of Atlantis, and of the metropolis, he breaks off, just as a council of the gods has been called by Zeus to arrange the annihilation of Atlantis. The *'Critias'* is but a fragment, but many years ago I thought I had found its other portion. The experts said not. They should know.

"My manuscript told of Poseidon's defense of his children, of the anger of Zeus at their war with the Greeks, his own children. They had strange, new weapons that slew at a distance as did the thunderbolts of Zeus, and the god was jealous. So it was that Zeus smote Atlantis with his own thunderbolts and turned the weapons of the Atlantides upon their own metropolis, 'and it became as if it had not been, and the god Poseidon buried the grave of Atlantis with his waves.' The Athenians easily overcame the advance-guard of slaves, who did not have the annihilating weapon, and the people as a whole ascribed the destruction of Atlantis to an earthquake and tidal wave, which, in truth, were caused by the disappearance of the island. Only the priests, and a few of the rulers and historians, knew the truth.

"Jack, the *'Critias'* speaks of an unknown, immensely valuable metal, orichalcum, 'that has a fiery resplendence'. We know not such metals. The classical dictionaries call it brass, but it would seem to be luminescent, even in the daylight. Many, some, think it a radioactive element or alloy, but there is no evidence, on Earth, of a deposit of radioactive material such as Plato indicates, and we have no samples. So the classical students label it brass, even though Plato definitely marks the distinction in his description of the city!

"Plato describes Atlantis fully. It was a zoned island, with a great central metropolis built on a hill or mountain. He describes the temple of Poseidon, describes the walls about the zones, and, Jack, *it is a description of this city*, except that the city is zoned instead of the island!"

"Doc! Why—! But—! You mean—!"

"I mean that is Atlantis!"

"But how can that be? How did it get here? They were mere savages eleven thousand years ago."

"Plato doesn't think so. And they had orichalcum. Jack, I think that someone, some priest, discovered the principle of our resonator, built one, a huge one, perhaps as a weapon, perhaps merely because the tendencies of Man seem to run to extremes in size, and with it brought Atlantis here! It may have been an accident, or, which is more likely, he may have been a priest of Zeus, a fanatic, who considered that Zeus had given him the secret of the divine thunderbolts in order that the dissolute, warring city might be annihilated. The transported island left a huge pit in the earth, a pit which the ocean filled, and which closed, submerging the rest of the island, when the sea-water struck the hot rock of the bottom. That was the tidal wave and earthquake that devastated the Mediterranean. 'Poseidon buried the grave of Atlantis with his waves.'

"They came out somewhere in this world, Jack, all but about two hundred feet being above the sea. It would be the farm-lands and the slum district that were submerged. They colonized the upper world, the surface of the planet. They grew crowded, found little land, only the hard black rock of the plateau. With their resonator, if it survived, or with some other tool of the sort, they bored through to this inner world. Their scientists would have known that it was here. Maybe they found a natural passage somewhere. At any rate, they built the ventilators, and this and other cities, copying the zoning and architecture of the old island, perhaps a myth by now, and making the ventilating system automatic, controlled by some strange property of orichalcum and of that crystal to emit the singing flame as well as light, the flame acting as a governor as I first suggested. It is a radioactive and electrical phenomena, I feel sure.

"For a long time they lived happily. Probably they were able to raise food under the artificial light, or in greenhouses. Their science would care for that. Then, before their last orichalcum was used up, they made their entire world unified, automatic, and settled down to the business of living. We shall know more when I have seen their library, for the script is much like old Phoenician. The library will be intact, for one of their laws makes desecration of the library punishable by death. Evidently it was closely connected with the temple, and hence holy. Then something happened, I cannot guess what, and the fungus swallowed up their world. Perhaps they were entirely blotted out. Perhaps they escaped to some other cavern, some other world even. Time may tell. We have a good deal to do, here, and in other cities. Now let us take a bit of rest somewhere, and then plan for the future."

AS we turned to leave, I chanced to look up. There, midway to the misted ceiling, was a little balcony of black marble, over the gate. With a word to Doc, I pressed the control and floated up toward it. Doc, seeing my purpose, followed.

There was little to see, but it told a great deal, more than we could have hoped. On the floor of the balcony was a square, box-like contrivance, with an extension and a lens. It turned out to be what it seemed, a camera. Beside it was a pitiful little pile of grey dust, all that remained of the cameraman.

While Doc examined the camera, I went alone down the narrow passageway that led off from the balcony. It was lighted, but after traversing a rather short flight of steps I came upon a great room built into the side of the building between the inner dome and the carved roof of the exterior. Through the crystal ceiling the light from the sphere above shone in, lighting the whole room brightly, though similar spheres, unlighted, were poised at intervals throughout its annular length. All the way around the building it extended, with passageways extending up and down into other parts of the building and of the city. Everywhere were tiers of strongly bound manuscripts and parchment rolls, while one entire section of hundreds of shelves contained roll upon roll of film, almost exactly like our own moving picture film, but metallic and very thin. Leading from this section, a broad stair opened into a darkened room

in the very peak of the dome, filled with small booths capable of being connected with each other, so as to accommodate a party. Each booth was provided with a projection apparatus and a small and a large screen, the latter probably used when two or more booths were joined for a number of spectators. It was the library of the priests, and, as we later found, of the nobles of the marble zone.

I hurried back to Doc, to find him on his way to look for me. He carried the camera and a roll of film like that in the library.

"Look for a projector," he called, as he saw me. "This film won't need developing, and I think we'll see something interesting if we run it off."

"I've found one," I replied, "and what is more, I've found the library. Come on, I want to see what you have."

Alas for my hopes! Doc had to explore the library before we went a step farther, and then he insisted upon taking apart a camera and a projector to show how the things worked. As he explained it, light and sound activated a sort of ray which in turn produced an inevitable impression on a paper-thin metal strip. The film needed no developing and was naturally far more durable than our own films. The frequency of exposure was almost doubled, so that every slightest motion and undertone was recorded faithfully. In the projector, a second scanning ray controlled a sort of microphone apparatus as well as a battery of tubes of different frequencies which produced fluorescence of various colors on an electro-chemically treated screen. Those are the fundamentals only; technically there was a great deal more to the matter than would appear at first sight, especially in the projector.

We settled down in the rather comfortable mesh-seats of the booth, while Doc put in the two reels that he had found in the camera. Alone, each was a perfect record of the type of our own moving pictures. Together, there was a decided effect of depth, due to a queer interference-phenomenon, peculiar to the special arrangement of treated screen and tubes, that made the result startlingly real. Part of the film, which had not been exposed, Doc had run off, after leaving a small gap, in scenes of the building as it now was and in a panorama of the city. Apparently I had spent almost as much time in the library as he had later, after I told him of my find.

The first scenes showed a city like that in which we were, but a larger one—nearly twenty miles across. It was the New York of Atlantis. Queer one-wheeled cars and a few four-wheeled ones ran here and there along the inclined roadways. Aerocars, much like our own, flitted back and forth over the zones, rising and descending vertically to the house-tops. The view was a panorama, taken from an aero. We were able to distinguish the people on nearby cars, though we could not see clearly those that thronged the streets. They were tall, with fair complexion, probably due to continued underground life during several centuries.

Then, even as we looked, the city was gone! In its place gaped an enormous pit, ten miles across, cutting up through the heart of the city. On one side the terraces were intact up to the third zone, where toppling buildings were falling, crumbling, dropping down into the dust of the disintegrated planet! On the other side the hole extended for over a mile out into the plain, where fields of grain lay flat under the force of the rising wind. Seen from above, it was curiously like an eclipse, a huge black shadow cut from the vari-colored disk of the city. Our aero dropped dizzily, sucked down by a great current of air that rushed madly down into the gigantic pit!

Just in time it was checked, and hovered over a sphere on the intact side of the city. Everywhere people were scampering to and fro like frightened ants, some rushing to the gates, some toward the pit where the cyclonic wind was crumpling the marble palaces of the aristocrats into a battered chaos! I wondered what was holding the aero, but I could not tell. Perhaps it was some force from the sphere. Everywhere else everything—aeros, cars, people were being sucked down into that great black maw by the irresistible wind!

We moved nearer and higher, above a second sphere. From here we looked directly into the pit, saw how it cuts its way down through the ordered heart of the city, down through level after lever of great, dim-lit caverns, where throbbing machines sounded above the frenzied scream of the wind and the piping shouts of the people, where huge branching tube-systems of penumatic railways ran out in all directions, where the vitals of the city were laid bare. Our aero was weakening now, its broad planes and undercarriage swept away by the tempest. Again the force of the sphere weakened, and we hurtled forward—and down! The roar of machinery swelled to a shattering clamor, faded, disappeared. We were falling, ever faster and faster, between great encircling walls of the glossy black rock that seemed to make up almost all of this planet, falling in near silence, for the voice of the wind was but a droning, sobbing wail. The pit's walls sloped slowly inward, forming a cone whose height or, rather, depth must have been many miles. It was as if someone thrust a stick through a snowbank and twisted it, boring out a mightly hole through which the snow-castles of a race of children were falling eternally in flakes of snow and ruin.

Above, past the vainly whirring helicopter blades, the bore of the pit ran up to the rapidly disappearing opening dimly lit with a rosy light, where the world lay dying. Then it had gone, and for a long time we fell in a dull twilight, filled with the flashing of falling lights. At last, below, miles below, another dim light brightened, a different light, pale and phosphorescent with something of the hue of the Indian Pipe that one finds growing in slowly rotting woodlands. There lay another world, a world where the thing that had cleft the city had originated. What was it like? What Things lived there that had planned this destruction of the upper world? We forgot, Doc and I, that we were but onlookers. The crew of the aero could have felt no more strongly the horror of the moment, and the awed, high-pitched wonder of it set our nerves on edge.

For at least an hour we fell, the camera seemingly acting automatically, while the dead white light swelled from a pin-prick to a gleaming eye in the darkness, and the rosy twilight faded around us. Then, of a sudden, the wind ceased and the little aero was whirled here and there like a bit of thistle-down in the maelstrom of the winds! The Things below had closed the opening through which air was being sucked into their airless or highly rarefied world. Like a chip in a torrent we were tossed helplessly, the voice of the winds once more an exulting shriek, until at last the black wall spun close,

there was a rending of metal and crystal, and we were tumbling dizzily down toward the pale white light!

Exploring aeros must have found the camera there, lying amid the débris of the upper world upon the vast disk of pure crystal, half a mile across, that filled the bottom of the hole, found it and brought it back to have its film run off by another aero-crew. For after one short, vague glimpse of a heaving sea of billowing luminous waters, and a wilderness of jagged black rock, smeared with red lichens, and covered with the crushed remnants of a once-mighty city, there was blackness, blackness that opened on another scene.

It was the city again, the shattered, torn remains of the once-glorious metropolis, with that great gaping pit staring at us like a dead sunken eye. The roads that led from the four outer gates were thronged with human beings, four broad living rivers of writhing color stretching out over the level plain between matted fields of pale green grain. Cars, pedestrians, even crude man-drawn carts heaped with furniture and provender, all passing endlessly on, ever away from the city, the homes forever lost to them. We were in a closed aero now, one of myriads that thronged the air or hovered over the roads, watching. Higher still, in the traffic lanes, were mighty commercial ships, filled with freight and packed with staring, frantic humanity. Here and there, traveling in little groups or long drawn-out ribbons were the private aeros. Apparently ours was a news-aero, filming the exodus of the peoples of Atlantis from their demolished capital, once the fairest city of all their empire.

WOULD that I could express the emotion that we felt as we watched that tragic flow of homeless people out of the shattered beauty of that great city! Some, who have also seen, have felt it, but not as we did, with the memory of the blasted city of grey dust fresh before us. Details stand out in my mind, quickly caught snatches as the aero hung low over the road or slowly moved along it. I see them again: the little ragged child, dressed in the blue of the laborers, toddling blindly along behind an old man of the aristocrats, who clutched to his breast his precious scrolls that dropped one by one from his weakening grasp; the delicate vase, a miracle in rose and ivory, lying by the wayside unharmed by the trampling feet that thundered all about it; the tiny, downy mite of a duckling, crying frantically, tottering on and on along the harsh stone of the road, stumbling, falling, beating with its little featherless wings in a vain effort to fly, clamoring with its feeble voice, beating at the broken glass and twisted metal underfoot with lacerated, bleeding webs until a great foot came down upon it and mashed it into a tiny mat of blood and golden down! There were more, many more like that, but of them all the struggling duckling stands out for me, for I have raised ducks and could feel with it.

For the last time the screen was filled with light. We were gazing from the little balcony into the great temple. It was filled with a frantic, milling press of men and women, trampling each other down in mad terror. They thronged upon the great statue of Poseidon, clutching at it with pleading hands, begging forgiveness, salvation, beating down the priests and guards who strove to drive them back! A figure clothed in flowing robes of green and gold appeared in their midst—the high priest. He raised his hands, spoke in a low, clear voice. As by magic the throng bowed its head, knelt. On and on rang that bell-like voice, reassuring, consoling, even as the first whisps of swirling grey appeared in the open doorway. He stopped, and all the multitude broke into song, a slow stirring chant that filled all the temple. Louder and louder, clearer and clearer it rolled to our ears, drowning out the cries of agony as the outer ranks melted and were gone. Like fire the malignant fungus ate its way through the praying throng, licking out tongues of sulphur or purple to pull down a tall youth or a feeble old woman, sending up twisting scarlet tentacles and wormlike arms of white! The cries drowned out the hymn now, but none stirred in fear. Fearless the tall figure beneath the golden statue gazed out over the dwindling sea of bent heads, as his strong clear voice sang on, leading, promising. Then he too was gone, and a thin, faint wisp drifted up toward the balcony. The camera toppled and the screen went blank. Doc stopped the projector. We had no desire to see again the grey desolation that lay over the city without.

For about a month we explored Yzdral—the "City of Heaven" the old Atlantides called it, for of all the two hundred cities or city-states of the Underworld, Yzdral was first, in beauty as in chronological precedence. One city only, the capital of the empire, had a temple of Poseidon more lovely, but of that we saw only pictures, for Luda, their capital, was the scene of the great destruction. We carefully removed the library, the contents of the Museum of Nature and Art, and the scrolls from the Amphitheater of Law-Giving to the upper world and stored them just within the great gates, together with a great many scientific devices which we found in the dim vaults beneath the city. Incidentally, Doc sent back a large sample of the fungus-spores with the other things when the time came. We did not send them at once, for one of us must be there to receive them, and we had no intention of returning as yet. I do not know why, but I seemed to have a queer feeling that when we had once quit that other world, Poseidon the Atlantides called it, we should not return. There was then no good reason for this, but—we have not. And we do not intend to.

Among other things, we had found hundreds of aeros on every level, aeros of varied type and mechanism. The smaller ones we used to transport our specimens to the ventilator, for only these long, narrow machines could pass through the door of the bronze cup at the shaft-bottom. Five of these, each loaded with orichalcum, we left with the other things. A sixth, an express aero too large to pass through the opening, we used later. It was long, cigar-shaped, with a crystal-enclosed control room and observation chambers in the front and sides of the stream-lined bronze hull. By means of the powerful orichalcum motors, using a sort of atomic energy, it was able to attain terrific speeds. We have done a thousand miles an hour in it, here on earth, where we were able to bring it after we found that the disintegrating ray from the Underworld had also blasted the roof of the upper cavern, above Luda, and opened a passage to the surface of the planet. It is capable of more.

OUR work over, we started in the aero for Luda, about five hundred miles away, the maps showed. Using low speeds, we arrived in an hour and a half. There lay the dead city, buried in the malignant grey

dust, there the gaping black pit, cutting through the vitals of the city into the unknown heart of the planet. Luda seemed bathed in a halo of green, as we approached it, for the light of the green sun poured through the riven roof in a great shaft of emerald light. We did not stop to examine the ruins, but flew straight to the pit and dropped down into the darkness, the control room revolving with us as the ship's nose dipped.

We went very slowly on our way down, so that the trip of a little over one hundred miles took over an hour. Then we slowed up and settled among the débris on the great crystal door that closed the narrow bottom of the pit. Through it we could see a pale white sea lapping at a craggy shore. Above the harsh black beach rose a ragged plateau, covered with ugly blotches of the livid red lichens that grew everywhere in this strange, unfriendly world in the planet's depths. There was no more. Evidently the Things, whatever they might be, had carried away the débris for examination, and sealed the pit, lest the inflow of air consume the vegetation of their well-nigh airless world. It would seem that any plan of conquest had been abandoned.

For a while we wondered how we were to get through without breaking the crystal, and spreading the alarm as the upper air rushed in. Then Doc discovered a sort of narrow air-lock in the pit's side, through which a single person could reach the inner world. Alone he went through, and returned alone. Beneath was the mechanism that moved the valve and he thought that he could operate it by himself, if I would pilot the aero. So, comparing our chronometers, we went to our posts. The seconds ticked off, slowly, slowly. Then, with a rush, the disk swung down and I found myself battling a screaming tempest that hurled me down, down until the pallid sea engulfed me. But the aero was watertight and air-tight, and when I bobbed to the surface, the disk was closed, the wind had stopped, and Doc was dropping swiftly toward me. I opened the hatch quickly and soon we were speeding over the strange landscape of this innermost world, with Doc at the controls.

Bordering the pale sea, and extending for perhaps twenty miles back from its edge was the rocky waste, black and ragged, stained everywhere with the red lichen like great clots of drying blood. Wherever there were crevices in which water settled a yellow scum formed at its edge, be it in motion or stagnant, sending out twisting arms into the grey, dead pools and the oddly phosphorescing rivulets in search of some food or other, I know not what. Other than the Things we saw but one creature in that inner world that was not plainly of the vegetable kingdom. It was a world of strange plants and plant-forms, adapted by the radioactive nature of the soil and water to exist upon the few thin gases of its air, or to live parasitically on one another.

Beyond the mountainous region in which we found ourselves, the land sloped down on all sides to a strange, unwholesome forest that filled most of the inner world. Indeed, almost all of the land that we saw, with the exception of the narrow rim of low mountains, was below the level of the white sea. Seepage fed the pools of the hot, fetid lowlands and dense clouds of vapor rose from the many swamps. For a while we hung over it, seeking a clue to the Things, then skirted the edge of the smooth cliffs that marked the edge of the mountains. The vegetation of the place was utterly unnatural and nauseating. Thrusting out of the steaming scum-covered pools were great tree-shapes with writhing, moving roots, and having smooth trunks like an eel's body. There was no foliage, but from the top of the trunk sprang a mass of slimy tentacular branches terminating in cup-like organs of a smoky orange, that contrasted strongly with the deathly white of the trunk and branches. From these hung little clusters of pale yellow fingers, lax or twisting hungrily. As we watched, a long branch darted down into the water near a root, then rose, the tentacles clutching the body of a small reptile, legless, with great white eyes, crimson gill-organs and a lithe black body ending in a flat tail. A few moments later, on the shore, we found one, also dead, and examined it. It took certain gases direct from the air, then used them over and over again by running them through the radioactive water until they could be purified no more. We turned from the sight of the carniverous plant devouring its prey. The crushed, pulpy form, the dripping juices, the eagerly writhing yellow scum—all sickened us. Was this the sole life of this inner world?

AS if in answer to our question, a gap appeared in the cliffs, opening into a huge amphitheater beyond. Its floor was smooth and black, and in its center, some ten miles from us, towered a great black city, a coned city like Yzdral and Luda. On its great outer walls, in its streets, was no sign of life, but between us and it rose a thin barrage of pale blue flame, rising sheer to the lowering ceiling of luminous clouds that shed a ghastly white gleam over the entire scene. Doc pointed below.

A gate had once closed the gap in the cliffs, but now it was shorn through as if it had been wax, seared clean, with no clue as to its destruction save a slightly billowing layer of rock that covered the otherwise smooth floor. It had been melted! On the side toward the swamp a thin ribbon of orichalcum had stretched across the pass, the source of the blue barrage, but now it, too, was twisted and fused. Here and there lay a blackened, distorted body, all that was left of the warders.

"Atlantides," said Doc. "Apparently they came down here, those who survived, to avenge the death of their race. They built a city, a stronghold from which to attack the Things that had exterminated their race. They could live here with respirators, as you can see from the bodies. They warred against the Things, perhaps they were very nearly successful, but finally their hiding place was found and attacked, their barriers broken down, their last stronghold shattered. I do not understand how that barrage was retained after their destruction. Perhaps it is automatic. But——"

"Doc! Look!" I shouted. "It's happening now! They're still there."

Extending from the city walls for several miles beyond the wall of flame, a sheet of pure white was hiding the black rock. With the binoculars we could see that tiny jets were spraying the rock with white enamel, And now, revealed in relief against the white, a cloud of vapor appeared, intensely black, surrounding the city. It seemed to be stirring slowly within itself, though we could see it only as a silhouette, to be moving uneasily to and fro as if it were waiting impatiently for something. Now, suddenly, the ring thinned. Opposite us the vapor flowed out from the main body in a single great cloud that took a spherical shape, then sped

to the barrage, tried it, flowed swiftly around its circumference, testing and trying all its surface. A smaller mass detached itself and returned to the main body. In response, the line thinned again, and the great sphere was doubled in size, reinforced. Off to the right of our position it formed a steep truncated cone, from which tiny darting wisps of black mist stretched forth to play over the face of the wall of flame. Now they returned, went forth again exploring a single spot midway of its height, returned once more. The cone shortened, thickened to a globe supported by a thin stem, sent forth the little black fingers yet again, altered its position a bit, then hung motionless. A sort of breathlessness, a nervous and electrical tension began to build up around us. I could feel it, sense its purposeful unease, even at our distance. The whole affair was unreal and horrible. What was this vapor that seemed to move of itself? What controlled it? What was its use—a poison gas, a smoke screen, what? I turned to where Doc had been, but he was gone. Then he appeared again, suddenly, at my side.

"Jack, try the resonator," he said. "Watch that vapor out there."

I obeyed. The city, the plain, the ship—all vanished in the familiar play of vivid color as I shifted slowly through the vibrations. But that rolling cloud of gas showed no tint nor faintest color tinge. It remained black, absolutely black. Reversing the controls, I returned.

"Doc, what is it?" I asked. "It's absolutely colorless, but that isn't all. It seems almost alive."

"It is alive, Jack. That is no mere gas-cloud, no radio-controlled weapon. It is a living, intelligent entity like ourselves, like the Atlantides, perhaps superior to us. What are its properties, its powers? I cannot tell, for it is entirely unearthly. But this creature of colorless vapor is the Thing that destroyed Atlantis. It is the unnatural enemy that the last of the Atlantides are combating, that may at last exterminate them. We are powerless to help them, Jack. We can take the offensive, with our resonators, but we have no means of defending ourselves. No, we must watch from a safe place while the Atlantides meet their fate, for it is our duty to live and warn the world that this Thing exists. Science demands it."

"Yes, we must return unharmed, I suppose; we must take no needless risks. But it is hard to see human beings like ourselves slaughtered by a Thing like that, while we stand safely aside, even though we know that any aid would be useless. It is hard always to be the scientist, Doc."

"It is hard, Jack. I know it as well as any. But we have chosen to set aside personal interests for the good of our race, and we must abide by our choice. A general may not lead his troops, Jack; he must remain in safety, even though they be dying in thousands. But look, it is going to attack."

The great black sphere on its narrow base had contracted until it was but half its former size. Now it began to spin slowly, ever contracting. A narrow black streamer ran from the base to the thin ring that surrounded the city, a cable for communication and transfer of power, energy. This, too, was growing smaller, moving in, while the globe whirled faster and faster. The tension in the atmosphere grew intolerable. Then of a sudden the strain broke, the small black globe sprang in an instant to its former size, then dwindled once more as a ball of scarlet, opalescent flame took form in its heart and grew until the black globe was gone and the circling ring had waned to a narrow thread.

Now this in turn began to contract until it resembled a huge opal lying upon a pedestal of ebony and velvet. Again the atmosphere grew tense to the breaking point. And now my brain began to throb in unison with the pulsing orb of light from which sprang thin tongues of glowing red flame that struck the blue wall of the barrage and sank into it. Faster and faster the living gem swelled and fell, faster and faster the bombardment of light bathed the wavering wall. Now it no longer sank in at once, but spread and cascaded over the quivering surface, flame devouring flame in a colossal battle of light. Faster, ever faster those rosy hammers beat at the azure wall, until at last it became a seething vortex of purple fire that swirled and danced, then died as a crimson lance struck full upon the unprotected band of orichalcum and blasted it in a chaotic fountain of golden glory. In over the fallen flame-wall flowed the hosts of the Things, armed with hundreds of tiny opals that had been born from the great gem of the battle. An aero rose above the doomed city, melted and fell blazing beneath the caress of a flame-tongue. We could no longer see the black vapors, for they were invisible against the walls of the city, but we could see the myriad little gems of opalescence, darting their tiny, deadly flame-tongues, as they flowed in a great wave over the city, fusing it into a dead black mound of cold rock, rock upon which a white frost was forming as the Things sucked from it its every drop of energy. As the little lights flashed out, and the great cloud of black vapor rolled toward us, Doc put the aero about and we floated out toward the swamp. Then, with a cry of alarm, he sent the ship at full speed out over the writhing tree-tops. Startled, I looked back. *The Things had seen us.*

DOWN the narrow gorge and over the steaming waters of the swamp sped the great colorless cloud, crowned with a single mighty ball of light. Before it, straight out into the marsh, stretched a broad lane of blackened vegetation and boiling waters cut straight through the heart of the living forest by the darting flames that strove to strike us down. Then it was left behind, and Doc slackened our awful pace, for it would not do to miss the opening of the pit and be forever trapped in the wilderness of this inner world. Before, we had skirted the edge of the forest; now we were cutting straight across it to the spot, somewhere on the other side, where lay the crystal valve and safety. More than three hundred miles an hour we dared not attempt and the black cloud, a blot against the pale swamp, was gaining on us at an incredible speed.

Far to the left the trees gave way to a wilderness of giant fungii, scarlet and purple and bilious yellow, that covered all the ground with its huge heaps of rotting color and distorted livid spires. Above it hung the grey spore-clouds that had brought destruction upon the upper world. And in the very heart of this Devil's garden rose the Crimson City, the city of the Things. We saw little of it as we hurtled far above and to one side, but we saw enough to make us wonder at the strange beauty of this fairy city of devils.

(*Continued on page* 124)

EVEN in a long and studiously industrious life-span, the amount of knowledge that can be imbibed is pitifully limited, when compared to the vast amount of things to be known. It would be a great help if some scientific wizard or wizards could invent some means of merely pressing a button, for instance, and immediately obtaining and assimilating the necessary amount of information on any desired subject. Dr. Keller runs close to becoming a real inventive genius. His touch of humor and inimitable surprise ending combine to make this story a literary gem.

Illustrated by MOREY

The Cerebral Library

By

David H. Keller, M.D.
Author of "The Eternal Professors," "Stenographers' Hands," etc.

"WANTED. Five hundred college graduates, male, to perform secretarial work of a pleasing nature. Salary adequate to their position. Five year contract. Address No. 23 A, New York Times.

"WANTED. Three librarians, well versed in world literature. Five-year contract. Address No. 23 A, New York Times.

THESE two advertisements attracted a great deal of attention. The market of supply, as far as college graduates were concerned, was over-stocked, and there was any number of young men who were willing to do almost any kind of work for any kind of a salary, let alone a salary described as adequate. The letters poured into the 23 A box, and every effort was made to ascertain the identity of the advertiser so that personal application could be made, but all in vain.

Each of the thousands of applicants received a lengthy questionnaire. Each recipient filled out his paper and sent it to a numbered letter box in the New York Post Office. Those who were fortunate had a personal interview with a sharp business man who admitted that he was simply engaged to select 503 men, capable of doing a certain work and willing to do it for a five-year period.

At last the five hundred and three men were selected. They were given tickets and expense money for a trip to an isolated town in Maine. They were told that the full scope of their work would be explained to them there, and that then, if there were any unwilling to sign the final contract, they would be permitted to leave.

In small groups of twenty or less the collegiates left New York. Their absence was hardly missed. None of them had been able, so far, to do anything else but graduate from an A.B. course in some university. They were mainly plodders, good men, but not brilliant.

The town in Maine was simply a town in Maine. Including its two hotels, boarding houses and private homes, it could, by crowding, take care of the unusual flood of visitors. The Methodist Church had been rented for a one-day meeting. It was understood that the meeting would take place when everyone had arrived.

At last the five hundred and three men were in the church. The young men were, to say the least, slightly excited. Up to the present time they had formed no idea at all of what they were supposed to do. A five-year contract with an adequate salary, was attractive, but, on the other hand, the work might be so unattractive that it could not be considered.

The three men selected for the position of librarians were seated on one side, up front, in the Amen corners. The others filled the church. The doors were locked. And then the speaker stepped out in front of the pulpit. He was a well known publicity man from Boston, by the name of Gates. He explained that he had simply been engaged to present a certain proposition to them and that he had nothing to do with the proposed work after they had signed their five-year contract.

His client, he explained, was a man interested in literary research. He was working on a new plan of universal knowledge which would require the reading

"Now I am all ready. I have asked my machine for what I want. I swing this lever and that starts the delivery of the information which I am asking for just now.

of hundreds and thousands of books of all descriptions and in at least three foreign languages, though most of the books would be in the English language. All that the five hundred young men would be asked to do would be to spend a certain number of hours each day in reading. There would be no note-taking and no examinations. They should simply read the books given them. The three librarians would, under instructions, run the library, issue books and keep a careful record of the books read by each man. If a reader had a hobby, such as mathematics or biology, that hobby was to be given consideration in his reading assignment. Adequate facilities were to be given for exercise, and the salaries would be ten thousand a year for five years, but during those five years the readers would be out of communication with the world. If they wanted to they could consider that they were in a glorified prison, or in an excellent hotel on a desert island. At the end of five years they would each have fifty thousand dollars and an extensive addition to their education. The librarians would each receive twenty thousand a year, or a hundred thousand at the end of five years.

Quickly a hundred questions arose for answer. Mr. Gates answered them to the best of his ability. Some secrets, he explained, could not be divulged. In fact, there were some things about the whole affair that he himself was absolutely ignorant of. The Farmers' Bank in Philadelphia had informed him that the man in back of the plan was worth at least twenty-five million dollars and no one need have any doubt in regard to his receiving his salary. He did not know where the library was, where the reading would be done; but he did know that everything possible would be done for the comfort of the readers. Of course, it would mean isolation, but at that salary isolation was preferable to contact and the ever present chance of poverty and actual starvation.

All that the applicants had to do was to sign a contract. They would then be given instructions as to their destination.

One and all rushed forward to sign on the dotted line. They were all serious young men, and the work looked attractive to them, even with the threatened isolation. As they signed, each man was given a ticket to Boston and an enveleope to be opened on arriving there.

Their journey to Boston was a far more cheerful one than the one to the isolated town in Maine. This condition was at least one of living. They had graduated and now they had made good. They were white collar men, but they had an assured income that would put them on easy street in five years.

In Boston each man opened his envelope. It contained a ticket to another city or town, expense money for the trip, and another sealed envelope to be opened on arriving there. And each ticket was to A DIFFERENT DESTINATION. Theirs not to question why; but each man was secretly sure that at the end of his trip he would find the new library and his five-year job.

The sealed envelope told another story. Another ticket, another amount of cash for traveling expenses, another destination. This time *the destinations for all were the same*. The guiding hand had deliberately tossed five hundred and three men to five hundred and three parts of the United States and Canada and had then tossed them back again to one place. There was no doubt of his purpose. Secrecy!

For some months the realtors of Stroudsburg had been thrilled by the news that Pennsylvania Manor on the crest of the Poconos was at last sold. For some years it had been a source of worry. Built on an elaborate scale to provide a pleasure resort for six hundred guests, it had failed to pay the necessary interest on the investment and had been kept closed. Its wonderful ballroom, golf course, and four thousand acres of land had been useless and worthless. Now it was sold and no doubt the resort business would pick up. There were a thousand rumors, ten thousand pieces of idle gossip. Everybody guessed and no one knew the truth.

A high wire fence was run around the four thousand acres and then the bare statement was given to the press that the Manor was to be used as a retreat for the intellectual, a place where education would take the part of religion and where, shut off from the rest of the world, consolation could be sought in higher intellectual development.

This information was all a very great disappointment to the people of Stroudsburg. They wanted the Manor filled with six hundred pleasure-seekers who had only one idea and that should be to spend money. The thought of turning the place into a monastery, with higher education as the only aim and the world shut out with iron gates and a steel fence, was not at all what the business men of the community wanted. Still, there it was and they had to make the best of it.

There were some changes made in the main building of the Manor. The most startling was the conversion of the ballroom and the rooms adjoining it into a library. Books were brought to the Manor by the truckload, books by the thousand, almost hundred thousands. The placing of the shelves, the arrangement of the books, the card cataloguing were all done rapidly and efficiently by a trained company of librarians. When the work was done the workmen left a perfect library. It was by no means the largest library in the United States, but few could compare with it in the scope of information which it covered.

The kitchen was opened and servants, well-trained and efficient, were installed. The golf course and tennis courts were put in perfect order. A lounge was fitted for a moving picture hall. There was everything for comfort, but there was no post office.

One by one the young men arrived at Pennsylvania Manor. They were assigned to comfortable bedrooms. Verbal instructions of a very simple nature were given them. Additional data was obtained from them concerning the courses that they had majored in while at college and their preferences in reading material. The three librarians, arriving, expressed delight at the perfect order of their workshop and at once arranged their part of the five-year program. Assignments were made to each man in such a variety that the entire range of human knowledge would be covered by their reading. Each man was to read three hundred books a year. That meant fifteen hundred books per man, or a total of 750,000 books for the five years.

That number of books, three quarters of a million, was by no means the largest collection in the world. The Library of the British Museum contained two million books and over five million separate pieces of printed matter, while the Imperial Library in Petrograd contained nearly two million separate books. Even the New York City library held one million, eight hundred thousand books and hundreds of thousands of pamphlets.

But it was a remarkable collection of books, considering the fact that it was most hastily gathered together by an unknown individual and for an unknown purpose. It had been purchased mainly from second-hand book stores, which, with a thrill that comes once in a lifetime, emptied their treasures into the Pennsylvania Manor.

Quiet days followed. The activity was constantly present but almost noiseless. Following breakfast, the readers went in different groups to various sections of the library and handed in the read volume of the day before, in order to receive a new book for the new day's reading. Some read in the morning and evening and exercised in the afternoon, while others devoted the morning hours to exercise. The time during which the book was read was optional with the individual, the only requirement being that the book must be diligently and slowly read during the course of the twenty-four hours.

The young men had been carefully selected. They were all of the methodical, studious type, who took life seriously, and who would have felt insulted had anyone dared keep a watch on them. Each day five hundred books were read, each day five hundred books were returned and five hundred more issued in their places.

The library was being regularly and systematically used. The librarians were busy; the readers were busy. It was by no means the largest library in the world, but it was a well used one.

The work done by these men was monotonous in its nature but diversified in its scope. The daily book was a new book, and it meant one less book to have to read before the new freedom could be won at the end of five years. One year passed and then two. Pennsylvania Manor ceased to be a novelty to the casual summer visitor. It no longer was a curiosity; it almost ceased to exist, as far as Monroe County was concerned. The summer sun burned the Pocono Mountains; the winter winds swept them clear of snow only to bring more snow; season followed season, but the readers read on.

FOR some years the activities at Pennsylvania Manor had attracted the attention of the Chief of the Secret Service of the United States headquarters, Washington, D. C. He was a man who believed in the prevention of crime rather than in the detection of crime, and nothing pleased him more than to look forward into the future, see that a crime was premeditated and then prevent the completion of the conspiracy by prompt action.

Among his various boxes of card indexes was one which he called his question box. Here, each on a separate card, were listed the details of extraordinary occurrences and happenings in the national life which he could not explain. He claimed that behind each of these lay a crime against society, and he spent long hours in two forms of study with these cards, going over them slowly, one at a time, trying to prepare for the future, first, by their story, and second, by comparing the details of unsolved felonies by going backward to the story told in the cards.

He was at this kind of work when a caller was announced. He looked at the card.

Taine of San Francisco.

"I wonder who he is and what he wants? Some crank, judging by his card," he said .

"What do you want?" he asked. "This is my busy day and I cannot give you much time."

"You sent for me. I thought you would know by my visiting card."

"Hmm! That doesn't tell me anything."

"It should. You wired the Chief of the San Francisco Secret Service for the loan of his best man; and here I am."

"So, the best they have out there is Taine?"

"It looks that way."

"I never heard of you."

"That may be true. But some of my best work has not been broadcast. I married the Chief's daughter. He likes me; of course, she does too, but she is busy now; so, the Old Man sent me. Want me?"

The Chief looked at the little man standing on the carpet in front of him. A trifle more than five feet tall, rather stockily built, with baby features and buxom cheeks, blue eyes and blond hair. It was a face hard to describe and harder to remember. There was no force of character there, and but little intellectual gleam in the eyes.

The Chief wanted to say something but did not know how. At last he blurted out:

"Not the killer type, are you?"

"Is that what you wanted? And so sent to our city for it?"

"Just a joke," apologized the Washington man, "and I suppose not in the best of taste. Sit down and have a smoke."

"Thanks, I never smoke. I find that the nicotine injures the delicate enamel of the teeth, and when that is gone, all soon follows."

The Chief went to his files and came back with a folder of papers. He pulled one card out of his question box.

"Read this stuff over and tell me what you think about it."

Taine started to read. An hour passed and then two. The Chief went ahead with his work, while the San Francisco man assorted and read the newspaper clippings.

At last the Chief could not stand it any longer.

"What do you think about it?" he asked.

"About all those books and the fence and those young men?

"There must be someone back of it with lots of money and fond of books," said Mr. Taine.

"Quite original! You really think things like that?"

"I think worse things than that sometimes."

"How would you like to go up there for a year or two and find out what it is all about?"

"Will it take that long?"

"How do I know? You might have to stay a lifetime. I honestly believe that there is something wrong going on up there, but all the information we receive makes it look perfectly harmless. At the same time, it will not do any harm for you to go up in some disguise and give me a report on it."

"I have the very idea. The proper disguise for a case like that would be something literary, something like the Encyclopaedia Brittanica. Well, I guess I had better go. If I have any trouble, I will let you know. Otherwise, I will report when the case is ended."

He was out of the office before the Chief had time even to reply.

The Chief took it out in thinking.

"Either he is a fool or I am!"

TAINE had a harder time than he expected in crashing the gate of the Pennsylvania Manor. He had expected that it would be easy to obtain employment in some way, but his polite questionings at the main entrance concerning work simply met with equally polite refusals. He watched that main gate for three days, but the only persons to go in were a few truck drivers, and they came out as soon as they unloaded their trucks. Taine finally was almost convinced that the only way he could go in was to enter disguised as a package of books.

But luck was with him. A little Italian came out on the fourth day, holding his jaw. He was bound for a dental office in Stroudsburg. Taine asked for a ride to town in the same automobile with the Italian and was granted his request. The extraction of a tooth and the chance of a trip to New York with a hundred dollar bill in his pocket was too much for the little foreigner to resist. The exchange of clothing and credentials was an easy matter. Taine asked a hundred questions in Italian as he made his face up, not much, but all that was necessary.

The Italian took the first train for New York. Taine met the automobile from the Manor and returned in it to the gate, but this time he passed through. His papers were satisfactory. He was the new bus boy for six tables in the dining room of the Pennsylvania Manor.

He held that position for six weeks and then developed a severe attack of appendicitis. Humanity demanded his release from the bondage which held all the men within the fence. He was sent to Scranton for the operation. In the hospital he disappeared. Twenty-four hours later he was in conference with the Chief in Washington.

"I have spent six weeks inside the Manor," he said, "and I have perfected myself in the work of a bus boy. I do not think that I should care to spend a lifetime at that kind of work, but for a variation it is a very pleasant pastime. When the time came I left. And some other bus boy is bus boying for me now, or, at least, I suppose so."

The Chief looked at him in a rather perplexed gaze, as he asked in somewhat of a harsh tone:

"What did you find out?"

"There are five hundred young men there, Chief, and each one reads a book a day. It seems that they have a motto—'A book a day keeps ignorance away.' There are three men who simply act as librarians and keep tabs on the books that each reader reads each day. They are just reading books. Of course, they eat and sleep and golf, but their great business in life is reading books. Think of it! It is not much of a library, mostly second-hand books, but think of five hundred books being read day after day! I mean a different five hundred each day."

"Are you sure of that?"

"Absolutely. I tell you why I am so sure. As fast as a book is read it is burned. They have kept the Pennsylvania Manor warm for over four years now with the books they have destroyed, and you should see that library! Four-fifths of the shelves empty; in fact, they are taking many of them down, and putting up new partitions."

"That is damn queer! Man must be a fool!'

"Must be. Tell you what I think. He is burning the books, because he has no more use for them. That is what a book is for, you know, to read. Of course, I always keep my books or give them away for Christmas presents, but his way is the best."

"Who is back of it?"

"No one knows; at least, no one will tell. Here is another point—the men were engaged on a five-year contract, but they are going to start turning them loose sooner, at the end of the fiftieth month, if they have finished reading the fifteen hundred books called for in the contract. They are going to start next March and let readers go at the rate of five a day. That means that some time next July the place will be empty and all the books burned."

"Are they going to be paid?"

"They think they are. Fifty thousand to each man, payable in New York City."

"That is going to run into money."

"It certainly is; so much that I doubt if the poor readers will collect; but they have been having a good time and their education has certainly been on the up-and-up."

The Chief looked puzzled, as he said:

"Something back of this."

"I am sure of it, and I am sure of another thing."

"What?"

"That I am going to find out what it is. This is the most interesting case I have been on and I am going to stay with it till I solve it. I guess I had better leave you now. Busy man and all that."

This was Taine's ultimatum.

"What are your plans?"

"Have none. Just going to drift till I get into the main current and then I will be swept onward into the Great Unknown."

He walked out without another word. The Chief gave him credit for being at least unusual, probably a crank bordering on the insane.

WING LOO may not have been the greatest surgeon of all times, yet he thought he was, and that is about the same thing. He was not on his way to America for the money which had been offered him, but because of the opportunity which he had to share in one of the greatest experiments of all ages. He might have performed it in China; however, he was a surgeon and not an electro-scientist, and the man who was to furnish the larger part of the machinery lived in the United States. So to the land of the foreigner Wing Loo went. He did not know the full details of the experiment, but what he had learned through correspondence convinced him that he was in for a pleasant time.

On the voyage to San Francisco an able-bodied seaman fell and fractured his skull. Wing Loo, hearing of the accident, offered his assistance and operated in a gale. It was a dangerous operation, performed under the greatest difficulties, so attracting the attention of a newspaper reporter on board ship that he radioed an account of it to a San Francisco paper. In that article he called the Chinaman "the greatest living brain surgeon" and intimated that he was on his way to America to give a series of lectures before the various national surgical organizations.

The article was published while Wing Foo was on the high seas. He promptly repudiated much of it when he had his attention called to it in San Francisco. His negation was laid to modesty.

Without loss of any time he took the Trans-Continental to New York. There he changed to European dress, went to Hoboken, took the D., L. & W. to Stroudsburg and an auto from there to the Pennsylvania Manor. He had dinner there with the three librarians, looked over the card indexes, and by dark was in Philadelphia.

Darkness anywhere is unpleasant, in Philadelphia it is more so. It was drizzling in Chinatown and dirty on Eighth Street. Without the loss of a single moment Wing Loo went into the Hoop Sing tea store, went into the main room and back through a door where a man was waiting for him.

"Are you Wing Loo?" asked the man.

"I am, if you are Charles Jefferson."

"I am Jefferson. Sit down. I have not had supper, let us eat. I have ordered the best there is and I hope that it will suffice. Shall I talk?"

"I wait for your words as a bride awaits the footfall of her loved one."

"I hope that she does not have to wait long. Life is so short under the best of circumstances. I have millions, but I cannot prolong my life. That has been my thought: the shortness of life and the inability to accomplish what I desire in my allotted days."

"Some day a man can be so treated that he will never die."

"You think so?"

"I know so."

"I have been told that you can keep tissues alive for years. Is it true?"

"It is. I have a kidney in glass. It has been working for twenty years. I believe it will keep on."

"You can do it with other parts of the body?"

"I can."

"So I was informed. I want you to help me with an experiment. If it is successful, we, you and I, will go down in history as the greatest scientists known."

"That would be wonderful!"

"It would. Now here is what I want you to do," and Charles Jefferson, the greatest specialist in electricity in the world and also the queerest scientist of his age, outlined his plan for the world-revolutionizing experiment. He ended with:

"I will be responsible for everything except the operations and the keeping of the tissues alive. That will be your province. I will finance the glassware and any supplies you need, and when the experiment is finished and you have done your part, I will give you one million dollars."

"You spoke of adding to the money the Empress's Black pearls?"

"I will add them."

"And only five hundred operations! Five a day?"

"Yes, but you must keep them alive."

"That will be my greatest desire. I understand that the whole plan fails if one of them dies. When can I start?"

"Very soon. I have a place prepared in New York. The young men will come there for their money. As they are paid, they will pass from one room to another. You will be ready for them. The specimens can be brought to the Manor, five or six dozen at a time, according to the size of the glassware you will need. If you give me the specifications, I will have my shelves built and all the pumping machinery installed. I do not want to begin the real experiment till your work is finished. Have I made myself clear?"

"Very. The clouds covering my doubt have been removed by the sunshine of your intelligence. What I do not know I can guess, and always I have faith in your wisdom. When will the feet of the young men hasten toward their reward?"

"The first five will arrive on the first of March. After that they will come at the rate of five a day."

"And each man will be paid fifty thousand dollars?"

"Yes, but the same money can be used over and over."

"Naturally. I can readily see that the young men will not have any desire to use their gold. Really clever, Mr. Jefferson."

"It has cost me enough, and they have had several very wonderful years—and to be permitted to take part in this experiment——"

"That," murmured the Oriental surgeon, "is the greatest reward."

ON the first of March five of the young readers left the Pennsylvania Manor, and five more followed on the second day. And so, day after day, the young men left, confident that life was very much worth while, and all eager for new and more active fields of mental activity. They collected the money and then passed through the door.

On the seventh of July the Chief of the National Secret Service received a message in code. Deciphered, it read like this.

"BE AT THE MAIN GATE PENNSYLVANIA MANOR AT MIDNIGHT JULY NINTH. COME ALONE AND UNARMED. TAINE."

"I thought the boy was a fool, but he has flushed the game," exclaimed the Chief. "Though there is a chance that this may be a decoy. Taine may be a prisoner and they may want to take me next. In a way, it is a fool telegram, sent by a fool. Guess I better go. But there is no use of going without protection."

The night of the ninth he dismissed the taxi a quarter of a mile from the main gate of the Manor and walked the rest of the way. It was full moon and really a very beautiful night. Even the unpoetical Chief felt the influence of the evening. At the gate he paused and thought what a fool he was to stay in the full moonlight, but he had no reason to fear. Taine was there, just on the other side of the gate. They shook hands through the bars.

"Hullo! Chief. Good of you to come. Would not have blamed you if you had not, but it is going to pay you. You will be surprised, Chief. Have to see it to believe it. Let me unlock the gate."

"What is it, Taine?" asked the anxious Chief.

"Now, don't allow yourself to get nervous. If anyone gets that way, I will be the one. I just love to get all shaky and trembly now and then, teeth chatter and hair up on end and all that. Come on in. Even July is cold up here in the mountains."

He led the way into the library. A little table was in the middle of the large room and two little splint bottom chairs stood on either side of the table. The rest of the room, except just over the table, was filled with black shadows. The Chief exclaimed:

"This is a whale of a room, Taine."

"It ought to be. First it was a ballroom, then it

housed one of the largest libraries in the world, and now it is the laboratory for one of the greatest scientific experiments ever pulled off in the history of the human race."

Taine took out an electric flashlight and swept it around the large room.

"See those glass jars?" He asked. "What do you suppose is in them?" Well, you would not guess, but I guess we will find out tomorrow. I am going to put you to bed behind that screen. You will be safe there. Keep quiet. At nine tomorrow, the experiment will begin and you can watch it; but don't get excited and come out too soon. That is why I asked you not to bring a gun. If you shoot, you might hurt somebody, and what I want is a full statement from the man, made in your presence."

"What man?"

"The man we want to arrest."

"And you are going to leave me here?"

"I am and I do not want you to move till nine. Then you can very quietly look through the crack and see what is going on. But don't shoot. No matter what happens, don't shoot."

"But you asked me not to come armed?"

"I know, but I do not think you followed my advice. You keep your gun, but don't use it. Watch me."

"Why don't you tell me more about it, Taine?"

"You would not believe me, Chief. Besides, I have to go through this on my own."

And that was all the satisfaction the San Francisco man would give. He fixed the Chief on a comfortable cot and left him there behind the screen.

IT was hard for him to do, but he kept his promise to Taine and did not look out through the crack in the screen till nine the next morning. And what he saw gave him occasion for many anxious thoughts.

In the center of the library was a large table of white marble, with thousands of little black points sticking out of it. Directly in front of the table a middle-aged man sat, facing directly toward the screen sheltering the Chief. The detective could see his face distinctly but could not identify him. On one side of him, also facing the screen, sat a Chinaman in flowery Oriental costume. At one end of the table was a mahogany box. At the other end was something covered up with a white sheet.

"And now," said the one man, "the time has come for the final experiment. I have asked you to be here, Wing Loo, because it is your right. Without your wonderful help I could not have gone ahead. My knowledge of electricity would have been useless without your knowledge of brain surgery.

"This entire experiment was started by a statement of an eminent psychologist which said that nothing is ever lost in the realm of knowledge, that everything once appreciated by a human brain is retained by that brain till the organism is destroyed. That declaration made me think.

"For years I have worried over two things; the shortness of human life and my inability to learn all there was to be known. Think of it! One person working as fast as he can and yet unable in the scope of a lifetime to learn all there is to know. I learned a little about electricity, but realized that I was pitifully ignorant about ten thousand other forms of knowledge. And I could only live just so long—and then I had to die.

"Then an idea came to me. From that came other ideas, like little bubbles springing from a central one, but I realized the hopelessness of the idea till I heard of you, Wing Loo, and of your wonderful surgery."

"I am glad that your servant could participate in your greatness."

"Yes, your surgery and ability to keep parts of the body alive were the necessary additions to my plan, and here is what I did. I engaged five hundred readers. They were each to read fifteen hundred books. Their books were to be carefully selected. One was to read biology and another chemistry and so on throughout all the various parts of human endeavor to solve the mysteries of life. And the books that each read were to be carefully indexed, both by subject and by reader. Each man had a number, though he did not know it, and each read every day a book. The three librarians kept up with their work.

"I brought the books here by the hundreds of thousands, and as they were read I had them burned. They were no longer necessary in my experiment because they had become engraved on the convolutions of the brains of the five hundred readers.

"All the time I was working on the electro-dynamic part of the experiment. I had to have fine wire run from each of five hundred glass vessels. These five hundred wires finally came together and then separated again and became attached to the selective black posts you see in front of you. I have other apparatus, intensifiers, and radios, all ending finally in that little radio you see at the other side of the table.

"Now, suppose I want to know all there is to know about toadstools? I want in a few minutes and without any delay to hear a thousand word synopsis of the knowledge of the world on toadstools. I spell out the word on this little typewriter in the middle of the table. Then I go up and down among the thousands of little black points you see there, each of which has a name, and I press those I am interested in, as Food, Toxicology, Botany, Geography, General Interest and a few others.

"Now I am all ready. I have asked my machine for what I want. I swing this lever and that starts the delivery of the information which I am asking for. I sit here in my chair and listen to a thousand word essay on the toadstool. If I want to I can take a subject like Anthropology and listen to it for several days. I can take one poem, such as Dante's Inferno, and have it recited to me. In fact, I can get anything I ask for, and all I have to do is to know sufficiently about it to ask the question and press the necessary points. *All the information in that entire library is mine, all I have to do is to operate this machine. I do not have to read a single book,* yet, I have the knowledge gained by five hundred men, working nearly five years each."

"How wonderful that I could help you in all this!"

"Your surgery made it possible. You took the brains from the five hundred readers and three librarians, and, through your skill, you have made it possible for those brains to remain alive and functioning for many years. You placed them in the five hundred glass jars and arranged for the pumping of the fluid to keep them alive. The men are dead, but their acquired wisdom lives on and I am the beneficiary. I am now the most learned man in the world."

"And I did all this—we did all this, without inter-

ference. No one has any idea of what we were doing."

"You are wrong," replied the Chinaman. "There was a man by the name of Taine. He suspected something, but he did not know what. He came here once too often. Early this morning I caught him. His brain will give me great pleasure. It is not often that I dissect the brain of a perfect fool. Here he is, a little doped, but very much alive."

And at this point he pulled off the sheet and there sat Taine, pitifully small, dazed, drugged and tied to the chair with a rope. The American started to laugh.

"That is the best part of the experiment, Wing Loo. At least, it is the most ludicrous part. You are right. Better add him to the collection. Now suppose we start with the testing of the experiment?"

"There is one thing you forgot. How about my million and the Empress's Black pearls?"

"I have them here. One hundred of them. Take them now if you wish to. Please do not delay me. See, I spell out *education.* Now I touch the following black points, *Australia, Statistics, Finance, History.* And now I swing the lever and the information comes through the radio." He rapidly went through the various steps. In a clear tone came the words:

"Now is the time for all good men and true to come to the aid of their party."

"That is very interesting! And is that the combined wisdom of five hundred and three brains?"

"IT'S that damn detective!" yelled the infuriated scientist. "I am going to kill him! You can do as you wish with his brains."

"No you are not!" shouted a voice. "Hands up! I have the drop on both of you. Sit down and don't make any false moves and keep those hands up."

The Chief of the Secret Service came across the space between the screen and the table. There was no doubt that he meant business.

"Thought you were going to kill one of the force, did you?" he sneered. "May be a fool, but he is a detective just the same, and we stick by each other. I will untie you, Taine, just as soon as I put the bracelets on these murderers. Hell! Five hundred and three good men gone! These fellows must be crazy."

He put the handcuffs on the scientist first and then turned to the Chinaman.

"You are next, Wing Loo. Put your hands out and don't try any monkey business."

"Don't you know me, Chief?" sighed the Oriental.

"Yes. I know you for a killer."

"Why, Chief. After all I did for you. Giving you a nice cot to sleep in and letting you arrest the greatest scientist of the age, Charles Jefferson, and then you want to put the cuffs on me."

"Who in the devil are you, anyway?" thundered the irate, yet puzzled detective.

"I am Taine of San Francisco."

"Then who is that there, roped to the chair?"

"That is Wing Loo. I suppose he is the greatest brain surgeon in the world, but he has had so much luminal for the last three months that his mind is not working right. He has been all in a dream for many days. Had to keep him that way to control him."

"So he is the man who killed all those people?"

"No. He is the man who was going to. He never killed one of them."

Charles Jefferson had been following the conversation eagerly. He could stand no more.

"You are a liar!" he yelled. "How about those five hundred and three brains in those glass jars? How about the five hundred dead readers?"

"Those brains over there in the jars are just wax brains," answered Taine! "I was sure that you would not know the difference. You really are a child in spite of all your learning. You and the Chink did not kill a single person, and I am not sure that you have broken a single law, though, of course, you did not give the readers what you promised."

"Just wax brains?" moaned Jefferson, "Oh! My beautiful experiment and my lost years!"

"Don't you worry. You can go to a library and read some books of your own."

"I cannot wait, Taine," pleaded the Chief. "Please tell me what you did and how."

"It won't take long. I was out in San Francisco with my family. Yes, there is a family now. Wife has a baby, a little girl, and we are all very happy over it. One day I read in the paper about the great Chinese surgeon, Wing Loo, and his coming to America, but none knew what for. I had a hunch that I would like to find out. A man like that does not travel around just for fun. It was easier when I found he was traveling alone. I met him, drugged him with luminal, and the rest was easy. He had letters, giving the directions for an appointment with Jefferson. At that time I did not know who Jefferson was, but I thought we ought to keep the appointment, so, I changed into a Doctor and brought Wing Loo with me as a very dangerous epileptic who had to be kept in twilight slumber all the time. I put him in a private New York hospital, and I took his clothes and met Jefferson in Philadelphia.

"After that I stayed in New York, and as the young readers came after their pay I gave them a song and dance, told them they had been working for an insane man but that if we could collect anything for them, we would. In the meantime, they should be thankful that he had not killed them. I told them all to keep still if they wanted to ever collect the money due them, and for a good many I found jobs. In the meantime, I ordered five hundred and three brains made out of wax, purchased some glass jars and some fake pumping apparatus and brought it up here. Jefferson paid all my expenses, including two good shows a week, though he did not know it. The tickets were in the wax brains, only he could not see them. He was not interested much in the brains, even let me attach the wire ends to the middle of the cerebrums. I do not think, to give the devil his due, that he was very enthusiastic over the idea of murder, but he just had to do it to finish his experiment. I pitied him in a way, so I put a portable phonograph in the radio so he could have his first cerebral message.

"When everything was ready I sent for you, Chief. I told Jefferson that we could go ahead at nine the morning of the tenth of July. Then I made a special trip to New York and rescued the Chink from the hospital. He has had a rough time of it, Chief. He has lost in weight, and it has been hard on him. If I were you, I would put him on a ship and let him go back to China. He is a good man, only over-enthusiastic. I brought him up here and dressed him in my clothes, and painted his face a little so he would look like me. I thought you

would like a real confession, and I knew it would make Jefferson mad to think that a detective had been on his trail. So, there are your two babies and you can do anything you like with them. As far as I am concerned, I am throught with the mystery of the CEREBRAL LIBRARY. You can clean up the trash. I am on my way back to wife and baby."

"But how about your pay, man?" asked the almost dazed Chief.

"I have these black pearls. They are worth a king's ransom. I earned them honestly and I know that Jefferson will not mind my taking them, and you can send me a check if you want to. I don't have much use for money, but—well, I am married and Mildred understands what to do with it. Goodbye. Take good care of my friends.

"I am sure that I am leaving them both in very good hands."

THE END.

Through the Vibrations

By P. Schuyler Miller

(*Continued from page* 115)

Spire on spire it rose into the thin air, over a mile from its base to the topmost pinnacle. There were straight, slender pencils that rose unbroken to a swelling sphere-top. There were twisted, spiral towers like a narwhal's tusk, crowned with mushroom roofs and overhanging balconies. There were great squat pyramids with level tops crowned by a pillared labyrinth. There were mazes of sky-flung columns, needle-pointed, hung with goblin arches and topped with golden spheres and ovoids. There were bulging Oriental minarets and peaked domes, somehow gone wrong. There were mad elfin pinnacles that earth has never seen, a chaos of peak and spire and arch that rivaled the twisting fungi in grotesque fantasy. And everywhere, blotting out the smooth walls of crimson marble, were the ugly, billowing vapors that were the Things. Strange that beauty and evil can be so associated.

Now, Doc had handed me the two spare resonators with his own and motioned me to the hatchway. I caught his purpose immediately. Soon we were speeding above the rocky cliffs between sea and jungle, and the combined beams of the resonators were biting deep into the rough rocks, cutting a great gash straight through the heart of the mountains, through and out into the sea. Then the chasm was the path of a raging torrent that fell relentlessly upon the swampy forests and the beautiful crimson city of the Things, burying them deep beneath the wan, white waters. Silhouetted against the tumbling flood I could see the black cloud that hesitated, then sped on in frenzy, the opalescent sphere gleaming balefully at the crest of the inky wave.

Then the crystal wave was open, blasted by my resonator, and we were struggling again in the maelstrom of the winds as the pressing atmosphere of the upper worlds rushed down to destroy the smothering life of the planet's core. The opalescent globe hung for an instant in the clutch of the winds, then hurtled against the rocky floor, to burst in a deluge of dazzling white flame that cascaded over the rough crags, smoothing them into a smoking, level plain. Against the frothing white of the sea a single wisp of black tossed madly and was swept away.

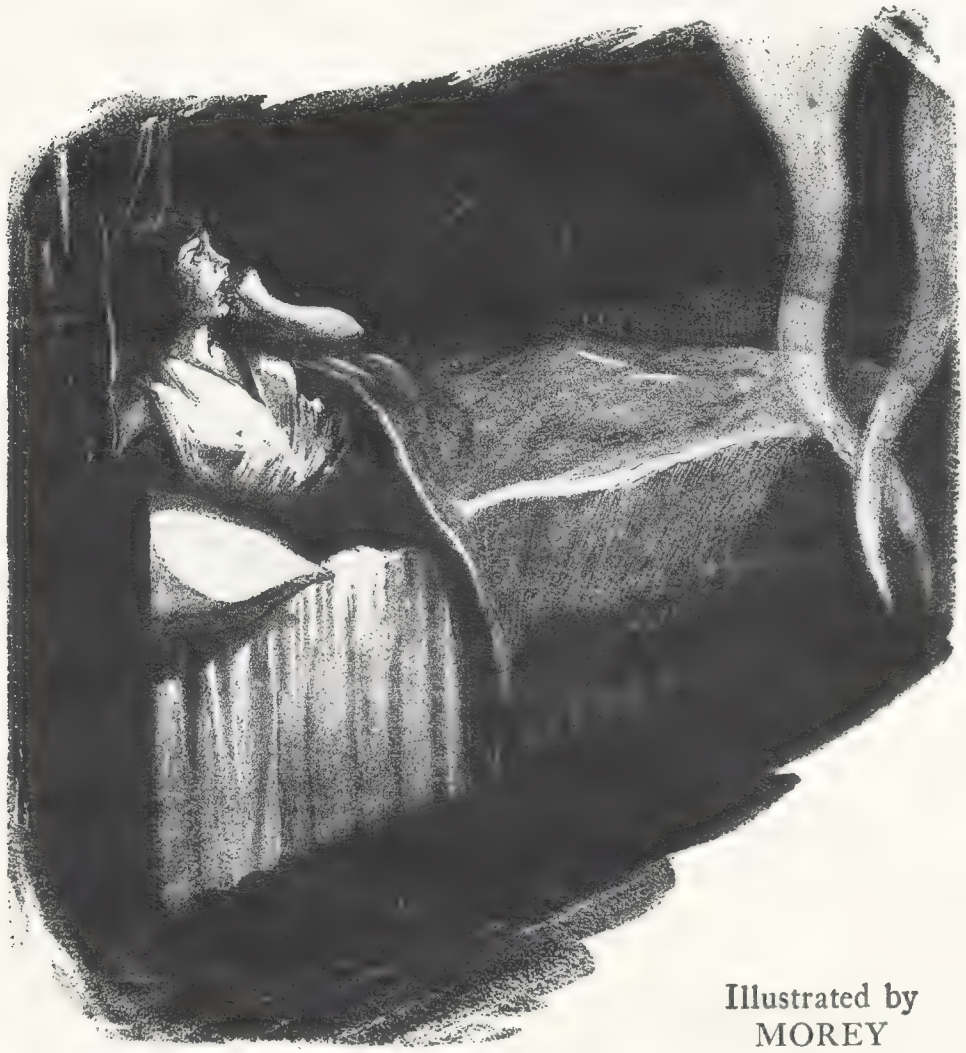
At last the winds lulled, and we won through to the cold bareness of the Atlantides' dead world, stripped even of the softening death-dust by the winds that gave vengeance. Two resonators, their power supplied by the remaining globes of Luda, we left to guard the bottom of the pit. If they are able to affect the Things, the upper worlds are safe from those inky clouds until the crystal spheres of Luda cease to shine. If there are still Atlandides somewhere in the upper worlds, the dust is gone, and they may start anew to form a great empire on their strange green planet—an empire that is secure in the knowledge of its inhabitants that there are those within reach who will give aid if it be needed. If such have survived, it is not impossible that the future shall see the reappearance of Atlantis before the Gates of Hercules, for we left in the rifled library of Yzdral the tale of our expedition and the secret of the resonator. Time may witness the extension of the empire of Man to the myriad universes of two systems or more, if they exist. But Poseidon, the planet of the Atlantides, will never again be visited by Doc or me. We have witnessed the destruction of the stronghold of the inner world. We have seen the inundated Crimson City.

We have seen the dead upper world, the world of Luda and Yzdral. We have seen enough!

THE END.

The Radio Detective

By Lincoln S. Colby



Illustrated by MOREY

FAR from becoming a simplified and routine matter, the life of the detective seems to become increasingly difficult. True, science has aided him not a little to detect the criminal. On the other hand, criminals have perverted the use of science to their own ends. But perhaps this only tends to make life more interesting for the sleuth—if more exciting. And certainly he needs to know more.

NOT many of you will remember the time, thirty-two years ago, when James Dowling, after a sensational trial in New York, subsequent to the brutal D'Arcy murder, was sentenced to thirty years of hard labor in the state penitentiary; and the newspapers of the day exclaimed at so lenient a sentence to such a desperate character!

Since that time prison methods have changed greatly, so that, when James Dowling was quietly granted his liberty two years ago, he was a wiser and better educated man, although even more perverted.

The long years of confinement he had employed to nurse a grudge which had developed like an evil weed in those dismal surroundings, into an implacable hatred, which so warped his mind as to become his dominant thought. Inspired by this motive and with the aid of a smattering of science which he had gleaned from the prison library, he had devised a plan to consummate his sanguinary desires. His cunning, he thought, would enable him to do this with no chance of suspicion fastening upon him. But then, he reckoned without counting that radio—that latest child-prodigy of science—would play the sleuth and bring him again to justice.

ON one of those quiet old streets of Chicago's suburbs, Nicolas Gardner, now an old man, and his charming daughter Millicent, lived in a dark gloomy house. The sunshine semed to become a memory as one stepped across the Gardner threshold. The universal dislike of the place, expressed by the few who visited it, was intensified by the sarcastic witticisms of the gaunt old man and the equally unpleasant taciturnity of the morose old housekeeper. How such a girl as Millicent could have developed in that atmosphere was a wonder. It was only to enjoy her friendship that a few braved the forbidding aspect of the place.

May Perrin was one of those friends, who was very fond of Millicent Gardner. On one occasion she persuaded her brother Neil to accompany her, for she often felt the need of someone to help her ward off the sense of oppression which seemed to stifle the occupants of this house. Moreover, she wished Neil to meet her friend, Millicent, and thought that the meeting would prove interesting to the lonely girl also, since her selfish father seldom favored any social activities for her, and the severity of her upbringing had prevented her from developing that spirit of independence which characterizes the flapper of the times.

The success of her idea more than satisfied May Perrin; in fact, she was somewhat piqued, for Neil and Millicent, from the moment of their introduction, in their absorption and eager interest in one another almost disregarded her, and made her feel like an interloper rather than an old friend. Neil seemed reluctant to leave at the early hour that the old man had ordained, and had to be satisfied with Millicent's permission to call again, "if father doesn't object."

Despite Millicent's unusually high spirits that evening she was worried, for lately her father was failing rapidly in health. Old men of his age are generally troubled with chronic ailments, but in his affliction none of Doctor Townsend's prescriptions seemed to be of any use. He was becoming daily more despondent, inactive and indifferent to food.

Their physician ascribed his condition to mental trouble and carefully questioned him to discover any cause for worry. Doctor Townsend's own private opinion was that such a morbid atmosphere and lack of any stabilizing hobby or outside interests were enough to affect anyone's mind and health.

Self-absorption is one of man's worst enemies, and many a man owes the continued maintenance of his integrity to some hobby, which occasionally distracts his mind from his worries and maundering thoughts of self. With this in mind, the doctor vainly tried to persuade Mr. Gardner to take an interest in some new activity, or at least to take a vacation in some place where he would find different surroundings.

His diagnosis of the case puzzled him more when his tests showed abnormal blood-pressure accompanied by depletion of the leucocytes or white corpuscles of the blood. Besides this the old man's hair was falling out and he seemed to be aging rapidly. No doubt some of the symptoms were unusual!

The doctor began to doubt his patient's sanity, when on the next day he learned that, kept awake the previous night by insomnia, he saw grotesque figures appear on the walls of his bedroom and swore that they danced and laughed at him and had contrived to fill his bed full of electricity. This fear of malignant electrical agencies, Doctor Townsend knew was a common delusion of insane persons. In almost any mental hospital there are such cases.

Millicent was horrified at the abject, trembling creature that her father had become after his night of terror, although he seemed to improve during the day when he sat in a chair in his library and dozed. He was complaining now of the pain which he felt in different parts of his body. The inflamed skin at these points showed sores developing, which the doctor could not ascribe to any of the usual skin diseases.

That evening Millicent was very glad to see Neil, for his gay pleasantries steadied her nerves after a trying day with the querulous old man. She did not invite him in, but came out on the veranda to talk to him. After explaining the illness of her father as the cause for her seeming inhospitality, she exclaimed:

"I do wish that I knew of something to interest father, for he just mopes around the house all day and sometimes mutters the strangest things. Really, between his delusions and the dreariness of this musty old house the place seems eerie."

Neil thought that he had a bright idea to introduce a wholesome influence into this abnormal household.

"What you need is a good radio set to bring a cheerful, sane contact with the outside world," he advised her, with an earnestness that amounted to conviction.

"No doubt your father will become an ardent fan like thousands of others who were first opposed to radio. You know, Millicent, that I am a radio engineer and I would be awfully pleased to let you try one of the sets which I have built."

Millicent was dubious as to how her father would react to this innovation, but gladly agreed to try it. Neil departed and returned later in his car with a superheterodyne set, batteries and a loop aerial.

He quickly installed the set in the library, and the old man was asked to come in and listen. To his daughter's great surprise he seemed interested in the classical music which came from their first station, and when instructed how to manipulate the tuning dials he delighted in seeking for those stations with the jazziest programs.

Even Neil was unprepared for the suddenness and completeness of this radio conversion. The relief which showed on Millicent's face and the grateful smile which she gave him, greatly enhanced the pleasure which he felt on the success of his idea.

At ten o'clock Millicent reminded her father that it was his usual bedtime, but he refused to leave his new delight.

Fifteen minutes later the loud speaker emitted a blasting series of crashes and scratching noises, giving altogether a more deafening pandemonium of static sounds than Neil Perrin had ever heard. Tuning had little effect on its intensity, except that it was worse, if possible, on

the lower wave lengths. Neil shut the set off on the protest of the old man, and the doctor opportunely arrived at that moment to examine his patient.

"Oh, Neil, what is the matter?" exclaimed Millicent, somewhat dismayed.

Neil was disappointed, for this superheterodyne was his pride and he had wished to merit the gratitude of this girl who had so quickly enthralled his fancy. He therefore explained:

"All that terrible racket is not due to any fault of the receiver, but is caused by the interference set up by some electrical appliance in the neighborhood. It is too strong for static. I think that I may be able to locate it by the aid of this loop."

Then, with the volume control turned down, he rotated the loop, but he could not narrow down the source of the disturbance very accurately, due to its nearness. Millicent quickly grasped the idea and led him to the oil-burner on their furnace. This proved not to be the cause, since, whoever had installed it knew his business and had equipped it with an interference filter.

Neil questioned her about the nearest house, whose side wall was separated from theirs by only a foot. She knew nothing more about it except that an elderly man had moved in recently and lived there, apparently alone.

The doctor was leaving now and had suggested that Mr. Gardner exchange bedrooms with his daughter, with the idea that this change might prove beneficial.

Neil left with the doctor after promising Millicent to come the next evening. Reconnoitering the vicinity he noticed that the nearest house had had a window placed, in what had formerly been a blank wall, at a location approximately opposite the bedroom of Mr. Gardner, and that there was a faint light behind the drawn blind while the rest of the house was in darkness. This might be just a coincidence, but he felt vaguely disturbed.

After seeing arrangements completed for her father's transfer, Millicent reluctantly went to his former room and made ready for the night's rest. Her active imagination prevented sleep for a while, and all sorts of morbid fancies filled her thoughts. She had an uncanny sense that something—a Presence—filled the room, and that evil forces were under its control.

SHE must have dropped off to sleep for a few minutes, for she dreamt that she saw her father lying in his bed and several little devils gleefully prodding him with pitchforks, while he tossed in agony. She woke with a start and opened her eyes, and HORRORS!—there at the foot of the bed on the wall was the ghastly figure of the grotesque creature of her dreams, and on either side two other weird luminous figures also equipped with pitchforks. These terrifying creatures seemed to be advancing upon her, so involuntarily she screamed.

Like a nervous, frightened child, she pulled the bedcoverings over her head to shut out the dreadful vision. It seemed that she could still perceive the ghastly image, and her tortured fancy saw it now perched on the end of the bed, ready to destroy her as she lay there helpless and now inarticulate.

She could no longer stand the suspense, so flinging back the blankets she rushed across the room in the darkness to reach the electric light switch. Her heart was beating madly and she felt nearly suffocated.

"Oh God, could she never find it! She would die of fright without the light to dispel this hideous nightmare."

Nearly paralyzed with terror, after what appeared to be ages, her frenzied fingers found the switch. With the flooding of the room with light, she was immeasurably relieved to see that the terrifying illusions had vanished, so, still wide-eyed and hysterical, she crept back into bed again. She felt utterly exhausted and her face was damp with cold perspiration.

To the housekeeper who came rushing into the room, aroused by her cry, she related the repetition of her father's illusion. When that unsympathetic and annoyed person had left she tried to calm herself, and decided to keep the light on for the rest of the night. No more visions came to trouble her, but it was not until nearly dawn that her fatigue conquered her excited nerves and sleep resulted.

The following morning she laughed at her fears of the night before. Nevertheless, the recollection of the ghostly figures gave her that queer sinking feeling, that one sometimes experiences in a rapidly falling elevator. She said nothing about her nightmare to her father, for she did not wish to encourage his own dreadful fancies.

Her father seemed improved that morning, except for the pain which his sores occasioned him. He spent most of the day listening to the radio set, which was operating perfectly. His good humor was such that he even went so far as to speak of Neil as a fine and clever young man, all of which pleased Millicent.

Neil put in an early appearance that evening and was pleased at the performance of his pet set. He was shocked at the pallor which had taken the place of the usual natural color on Millicent's pretty face, and was quite alarmed by her recital of the night's horrors.

"Oh Neil," she faltered. "It was hideous! I don't see how I can stand another night of it."

So, while the other two listened to the radio program, Neil was absorbed in other thoughts and gradually a sinister suspicion forced itself upon him. His theory seemed to be quite probable, for many heretofore inexplicable things were readily accounted for.

He mustn't alarm these two needlessly, for his fears might prove groundless and then he would appear ridiculous.

"Have you lived here long?" was the innocent question which he put to Millicent as a result of his cogitations.

When she replied briefly: "Ten years," he questioned further:

"I don't think that you have told me yet what your father's profession used to be or where you used to live."

In some detail she told him that they had lived in New York City, and her father had been a judge in the criminal court. Then her father had retired and soon after took a sudden notion to come to Chicago. Since then they had lived in this house, (which she had always hated), and throughout their ten years' stay they had not made the acquaintance of a single one of their neighbors.

Neil had wanted to find out whether her father had any enemies, so when he learned that he was a retired judge, he felt that this fact would account for the unseen operations of a revengeful person, which he suspected. One often read of judges, jurymen, and such persons being the victim of the malefactors whom they had assisted the law in bringing to account for their deeds against society.

A plan soon formed in Neil's mind to establish the truth of his suspicions. After a few minutes more conversation, he told Millicent that he would like to go home for a few minutes to get some apparatus which

would help locate the radio disturbance, if it should return later that evening (as he was secretly sure it would).

In a short time he returned with two packages, which he had obtained from his own small laboratory. These he laid aside for the time, and impatiently waited until the disturbance of the previous night should be repeated.

He had not long to wait before the radio storm broke loose. The old man angrily twisted the dials without avail, then savagely shut the set off like a petulant child.

This was Neil's cue.

"If you have no objection, Mr. Gardner," he stated, "I think that I can discover the cause of that infernal racket by walking around the house with a little instrument of mine."

"By all means do so," replied Mr. Gardner, without further inquiry into his purpose, for all the apparatus of science were wonderful to him and he made no attempt to comprehend their mysterious nature.

"Can I be of any help to you?" offered Millicent.

"No thanks, I'll manage more quickly alone," returned Neil, for it did not suit his purpose that anyone should accompany him on his investigation.

Hastily he unwrapped his two packages. One of them held a small round glass jar with an insulated conductor projecting from the top and connected below to two fine gold leaves suspended from a rod within, and known to the initiated as a gold-leaf electroscope—a very simple and sensitive instrument, which has often proved its usefulness in recovering lost phials of radium.

He connected the terminal of the electroscope to the storage battery of the set for a second and immediately the two gold leaves took up the electric charge and separated from one another with mutual repulsion, since both bore like charges, and one of the laws of electric charges states that like charges repel, while opposites attract.

The other package proved to contain a black tapered box affair fitted with a handle, an aperture for the eyes at one end and a screen at the other end.

With these objects he went directly to the bedroom, where the strange fancies came to the sleepers, switching on the light as he entered. The leaves of the electroscope, which he had been intently regarding, collapsed as he entered. That, he knew, proved that the air in the room was so ionized by electrical emanations that the charge on the gold leaves of the electroscope rapidly leaked off and allowed them to fall together.

Neil now was aware that some powerful, and in this case baleful, electric force was in operation. Possibly it was projected as invisible rays, but that he had yet to determine. Switching off the light again he adjusted his box-like device to his eyes and approaching the head of the bed pointed it towards the wall behind it.

On the screen of the device he saw the well defined outline of the bricks in the wall, the wooden laths faintly, and even the nails in the laths appeared as dark spots. As far as he was concerned the inhuman means employed to destroy the mind and body of the old man were laid bare; it only remained to catch the malicious human being directing this malevolent force.

As he turned around to switch on the light, Neil's steady nerves received a shock, prepared though he was for strange things. The hideous luminous figures which Millicent and her father had seen were real!

"No wonder the old man's reason was tottering, with such devilish ingenuity employed to create illusions that an over-active imagination would multiply and endow with motion and malicious intent. How little was needed to stimulate morbid fancies in this dismal old house?" he thought.

Without waiting to make further investigations, Neil rejoined the others in the library, where they awaited him with growing curiosity. He did not disclose the nature of his discovery but simply announced that he had located the source of the disturbance, and would go out for a short time now to put a stop to it.

IN a moment he was out in his car speeding away, and returned only a few minutes later accompanied by two detectives.

Going to the house next to the Gardners', one of the men dexterously opened the front door with a skeleton key and they crept softly up the stairs to the back room of the second story. The door to this room was closed. Drawing revolvers, the two detectives pushed the door open and entered.

"Hands up," they demanded, as a man, slouching in a chair by some electrical apparatus near the window turned around sharply, with a startled expression at their unexpected entrance.

This grim-visaged man readily complied with their demand, and spoke in sarcastic tones:

"And what can I do for you, gentlemen?"

"Come to the station with us quietly," replied Jones, the elder of the two detectives. "You are under arrest on a charge of attempted murder of Judge Gardner by means of X-rays. You were pretty slick this time, Dowling, but you forgot that your electrical equipment would affect any radio set in the vicinity."

Dowling did not attempt to deny the charge, but merely indulged in muttered imprecations concerning radio.

"Come along, Dowling, and make it snappy; this will be your last trip," Jones ordered, preparing to slip the handcuffs on the ex-convict.

"I should worry what happens to me; I swore thirty-two years ago to get Judge Gardner, and now I'm satisfied, because he'll never recover from his X-ray burns," retorted Dowling sullenly.

"But," he continued, "If you will allow me, I'll first shut off my infernal machine."

Before anyone could stop him, Dowling moved towards the apparatus, but instead of a switch he grasped the terminals of the high-voltage transformer! Neil Perrin had suspected his intention but acted too late. A flash, a stiffening of the ex-convict's body, a smell of burnt flesh, and then the lifeless body toppled backwards and James Dowling's soul was on its way to its last judgment.

Neil pulled the switch on the small panel while the two detectives exchanged comments on this unexpected turn of events and satisfied themselves that Dowling had really given them the slip. Leaving the other two to dispose of the body, Neil slipped out to break the news of the attempted murder to the Gardners.

Millicent was amazed and horrified when he related the diabolical plan to encompass her father's death. The old man, however, seemed to be greatly relieved, and muttered:

"Thank God that Dowling is dead. For a long time I have lived in constant fear, for I knew that he would come to get me."

Jones entered at this point, for he wished to inter-

view the intended victim and to hear Neil's explanation of electrical points involved.

Doctor Townsend was saying, "Now I can recognize Mr. Gardner's condition as largely the effect of X-ray burn, but, of course, such a thing never occurred to me as a possibility as I suspected no unnatural cause."

He continued: "This fellow Dowling must have been pretty well versed in the effect of X-rays. He probably gave fairly short exposures every night for some time past so that the burn would not become too severe all at once. Even though weakened by passing through the wall, the effect of the rays is cumulative and therefore a long time could be taken before the burns became fatal.

"The falling of the hair is a direct consequence of considerable exposure to X-rays; in fact that is one of its therapeutic uses. The human blood contains red and white corpuscles—about five million of the red and five thousand of the white per cubic millimeter. Undoubtedly, Mr. Gardner's general debility is due to the destruction of these white corpuscles or leucocytes. Furthermore, as these cells are responsible for resisting the micro-organisms of disease, their depletion causes a dangerous condition of susceptibility to any of the contagious diseases which are prevalent now.

"For this reason," he added, turning to Mr. Gardner, "I think that we had better take you to the hospital tomorrow where you can be looked after better and have proper treatment for your burns."

No objection was offered to his proposal and it was further agreed that Millicent should go and stay with Neil's sister since she dreaded staying alone in the house.

Millicent was still mystified, so turning to Neil she asked:

"It doesn't seem possible that that terrible convict could shoot his X-rays right through a brick wall; and those awful figures which appeared on the wall—tell me, were they real?"

"Although X-rays have properties similar to light waves," began Neil, "they can pass through many substances opaque to light. A brick wall offers some resistance to the passage of the rays, but it is a slight obstacle to the two powerful X-ray generators of the latest Coolidge type which Dowling employed. Besides, he removed the brick wall on his side and substituted a window.

"I first became suspicious of an X-ray machine when the radio set produced those terrific noises. The electrical equipment associated with an X-ray outfit generally creates such an annoying disturbance, as many a harassed amateur with a short-wave receiver in the vicinity of a hospital will testify."

Neil continued in his explanation: "The electroscope and fluorescent screen proved the presence and indicated the source of the X-rays. The ghastly figures on the wall were quite real. They were enough to scare the wits out of anybody, and I got quite a scare myself. Probably the fiendish use of them was an afterthought with Dowling, who wished to add terror to pain. Such figures are easily produced and glow only when excited by X-rays and when the room is dark also. The figures could be traced on the wooden paneling of the walls with crystals of calcium tungstate or barium platino-cyanide mixed with a little vaseline without showing any signs by ordinary light."

Next day the old man was taken to the hospital, but despite all efforts he did not live very long. However, his interest in the radio set which he was allowed to have by his bedside, and the knowledge that his daughter would be well taken care of by Neil were great solace to him.

When he finally succumbed to the combined effect of his burns and the influenza which he had contracted, he was listening through the headphones to a distant jazz-band in Texas.

THE END

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What range of the vibrations of the ether affect the eye as light? (See page 103.)
2. Are light waves longitudinal or transverse? (See page 103.)
3. What is the range of infra-red and ultra-violet rays? (See page 103.)
4. What was the old-time view of the atom? (See page 130.)
5. What is the modern conception of it? (See page 130.)
6. Give a general description of wave action of longer and shorter waves. (See page 132.)
7. Can you describe the eye from the standpoint of vision? (See page 136.)
8. How often can the retina receive impressions in a second? (See page 136.)
9. Can you describe the hydrogen and the oxygen atoms? (See page 137.)
10. How does the planet Venus compare with the earth? (See page 142.)
11. What are the characteristics of the orbit of Eros? (See page 145.)
12. What does "in opposition" mean when applied to a planet? (See page 174.)
13. What is a superior planet? (See page 174.)
14. How near can Mars come to the Earth? (See page 174.)
15. What is one theory of chemical combination based upon the Bohr or planetary atom? (See page 179.)

Beings *of the* Boundless Blue

By Walter Kateley

Author of "Steam Heat," "The Hollister Experiment," etc.

IF the atom is a little planetary world with perpetually circling electrons—and one of the latest conceptions of the atom says it is—then it undoubtedly has properties of which man is yet entirely ignorant. Each electron and proton in the atom must have still undiscovered properties and powers. "Beings of the Boundless Blue" may seem far-fetched and fantastic, but it cannot be termed entirely "impossible." At any rate, the story makes excellent reading and is thought-provoking to boot.

A FEW days ago I received a note from Mrs. Kingston, saying that her husband had returned home safely after a strange adventure in a mysterious realm.

Mr. Kingston, who is a scientist, disappeared a few months ago from his little home laboratory, under very peculiar circumstances.

It so happened that I arrived on the scene shortly after his disappearance—the next afternoon in fact—and my attempt to assist in finding him resulted in a very extraordinary experience.

That experience, however, is a different story.

I knew that Mr. Kingston had made a very deep study of the atomic structure of matter; and at the time of his disappearance he had been engaged in an experiment of far-reaching possibilities, one which, if brought to a successful conclusion, might conceivably revolutionize all productive industry.

My impression was that Mr. Kingston was a very remarkable man, engaged in a very remarkable work; and the "adventure in a mysterious realm" so enlivened my interest that I decided to make a hurried journey to see him.

Mr. Kingston received me cordially and readily consented to tell me the story of his unique experience. The tale that he then unfolded is, I think, without a parallel in all the annals of scientific adventure.

Mr. Kingston Tells His Story

I HARDLY know where to begin this story, for it all started from my interest in the atomic structure of matter. Ever since my high school days I was very much absorbed in this subject; and I have watched, with considerable interest, the growth that knowledge in this line has made during the last two or three decades.

You remember when we were in school we were taught that the atom was the smallest unit of matter, and that it was indivisible. Since that time it has developed that the atom is quite a complicated affair.

One of the modern conceptions of the atom is that it is a minute replica of our solar system, made up of a number of units of two kinds—namely, electrons and protons.

The electrons are little particles, akin to or actually a negative unit of electricity; and the protons, even smaller but very much denser, are particles akin to or actually positive units of electricity.

"Almost at once I entered a low-hanging cumulus cloud . Then I entered a region of nimbus, or storm clouds. . . ."

The center or nucleus of a group constituting an atom, the part that corresponds to the sun in our solar system, is made up of a cluster of electrons and protons, and around this center, following orbits of varying diameters, are a number of electrons rotating at a very rapid rate. The hydrogen nucleus has no electrons.

In different substances there are different groupings and numbers of these electrons and protons.

For instance, an atom of oxygen contains in the nucleus eight electrons and sixteen protons, in four groups or masses of four protons and two electrons each; while circulating about this nucleus are eight electrons in two orbits. Two of them in a small orbit and six in a larger one.

Then again, hydrogen has only one negative, circling around one positive unit.

But in all kinds of matter these elementary units are exactly the same.*

Well, about three years ago I had occasion to do some research work in connection with a job that we had on hand at the plant. (I have been employed for a number of years as experimenter and laboratory expert for the McCrea Brick and Tile Machinery Company.)

We were constructing a machine, the nature of whose work required it to run continuously and without vibration for several days. Hence it was necessary to expand the metal of the principal bearing by some gradual process, in order to compensate for the play occasioned by the long run.

In the course of this research work I learned through an article by Prof. R. W. Wood, in a then recent number of a science magazine, that crystallized quartz possesses the quality of expansion when magnetized.

This led me to infer that all materials might expand more or less when subjected to the influence of a magnetic field. By careful experiments I found this to be true of a number of metals. Fortunately, I hit upon an alloy that possessed the necessary coefficient of expansion to suit the requirements of the bearing in question.

However, my interest was so aroused that I was not content to allow the subject to drop.

I decided to convert the old greenhouse on the back of our lot into a laboratory, and continue my experiments in this line privately.

IT was about this time that the sound magnifier was so perfected that it became possible to hear the process of magnetization going on within a piece of metal. And I read how a famous scientist, lecturing before an electrical society in New York, gave a demonstration in the course of which the entire audience were able to hear the commotion incident to the magnetizing of a fragment of iron. What was happening, the lecturer explained, was that the atoms were turning in such a manner as to all face the same way.†

I was far from satisfied with this explanation; for I reasoned that since an atom was like a little solar system, and in the case of iron entirely stationary, it could hardly have any front or back. It would be like trying to determine which was the front and which the back of a stationary ball.

It seemed to me more logical to suppose that the orbit of the encircling electrons in each atom were being enlarged, and during the period of readjustment they naturally collided with their neighbors, causing the sound. This theory was materially strengthened by my recent work on the bearing materials.

It seemed probable that if an electric field could enlarge an atom, even slightly, there might be some form of energy that would enlarge them indefinitely. I set to work to test the effects of energies of various wave lengths on metals and other substances.

It would be very difficult for me to explain my theory, without going so deeply into technicalities that it might severely tax your attention to follow me, and perhaps consume a great deal more time than either of us have at our disposal. So we will not go into detail.

Suffice to say that there are, in a constant state of vibration throughout all matter, a great many waves of energy. In ordinary daily experience we are familiar with three groups of these waves.

First, there are a few very long waves to which the receiving sets in our auditory equipment respond, and we have Sound. Then skipping a great many and taking up again, there is another little group that we recognize as heat.

And then omitting a great many others, we come to a group of very short waves that we visualize as light and colors.

But the few that we are able to detect are only as a drop in the bucket as compared to the millions that escape our notice.

There are, in fact, a few of the light waves that we are able to detect and utilize by mechanical means. For instance, there are the waves employed by the X-ray machine, in length far shorter than those which produce color.

And then there are the waves utilized by radio, with whose length the radio fan is now becoming so familiar.

But it was the short waves, in the vast region beyond the light waves, where the ultra-violet and X-rays lie, that I suspected would have the power of greatly enlarging the orbits of the electrons in the atom.

Indeed, my hopes were more ambitious than merely to enlarge atoms. I hoped that, after indefinitely expanding and rarefying the atoms, I would be able to break them up into their component parts; thus giving me free electrons and protons, that could be reassembled in any desired ratio to produce any required substance.

Needless to say, this last has never been fully realized; but the possibilities are almost limitless.

Again dispensing with detail, I will say that I finally evolved a formula for producing a substance which, somewhat after the manner of a storage battery, producing electric energy, would produce a group of these very short waves, having power to greatly enlarge atoms.

These waves are much shorter than light waves, and I hope will some day be known to the world as Kingston waves.

Well, after making a small quantity of this energy-producing substance, I decided to have my invention patented. And it was through my application for patent of the process of making this substance, which I called *Transite,* that my work first came to your notice.

While the patent was pending I continued my duties at the plant; but during all my spare time I worked in my own labtoratory.

And now I come to the event that led up to my setting

*Elmer Davis states this theory rather tersely in his book, "Show Window," page 14, where he says: "A drop of water, a puff of smoke, and Edward Bok are all alike, made out of electrons. The only difference is in the arrangement."

†Address of Dr. Clyde Snook, on "Scientific Conquests of 1927."

out on that strange journey that I have promised to tell you about.

ONE Saturday afternoon I was working over a number of units or disks of Transite, which I had isolated in a bath of non-conducting liquids. Each unit was designed to act upon a different kind of material; for the formula used to produce a Transite to act upon a substance such as metal could not be used to produce one to act upon stone or water. And among others, I had one which I had designed in the hope that it would act upon animal protoplasm.

I was surprised when I saw, or thought I saw, a slightly purple sheen appearing on the disk. I could not account for this coloration. So I took it up in a ladle to examine it. I had always refrained from touching this particular disk, because I feared its energy might be destructive to the cellular composition of human flesh.

It happened to be a slightly cloudy day, and the light coming through the glass roof was somewhat poor and distorted. Thinking to secure a better light in the open, I stepped out of the door, holding the ladle as steadily as possible, so as not to spill any of the insulating liquid. And as chance would have it, I stumbled violently over a stray brick, and jiggled the precious disk out of the ladle.

Knowing how frail it was, I feared that if it fell on the walk it would be demolished. So on the spur of the moment, forgetful of danger, I automatically thrust out my free hand, catching it as it fell. I essayed to deposit it again in the ladle.

But even as I raised it, I felt a spasmodic contraction of the muscles in my hand, and my fingers refused to relinquish the dangerous disk.

Only then did I realize what a rash act I had committed. I stood for a moment half dazed, with fear, looking about me for some means of relief.

Then as I looked again at my offending hand I noticed to my horror that it was rapidly increasing in size, swelling as if with a quick poison.

Almost simultaneously the arm became affected and began to enlarge rapidly but painlessly.

By this time I was indeed terror-stricken. My first impulse was to call to Mrs. Kingston at the house. But I reflected that she could be of little aid, since she had but a meagre knowledge of science, and although she might call a doctor, there was little chance that he could do anything for me.

It seemed best to rely on my own devices and spare her the horror and shock of seeing me thus.

Then I tried desperately to think of some means of counteracting or arresting the influence of the Transite.

Meanwhile the enlargement process was spreading to my whole body, and I felt myself momentarily growing larger and taller.

After my first moment of alarm I became calmer and reflected that probably this effect was only temporary and would presently wear off. But even while I tried to reassure myself, I grew to a size out of all human semblance; and to my surprise I experienced a feeling of lightness that was entirely out of keeping with my huge bulk. I now towered above the little laboratory like a colossus.

How small and insignificant everything looked!

I caught a glimpse between the houses of a woman going along the street. She appeared so tiny, and toddled along with such mincing little steps, that I found myself laughing, in spite of the gravity of my situation.

Then I started to walk up the flight of stone steps that led to the laboratory, and found that I could mount two or three steps at a time without effort.

But as I reached the top step I did not cease to ascend. I felt myself lifted by some invisible force, bodily into the air. I literally floated in the atmosphere.

This was indeed a serious development. I waved my arms and legs desperately in an effort to propel myself back to earth. But in spite of all my efforts I felt myself rapidly losing ground.

Then like a drowning man clutching at a straw, I seized the topmost branches of a maple tree and held on for dear life. For a moment my flight was stayed; then the branches gave way in my hands, and I was off into space.

I REMEMBER wondering dimly if any one would see me in my ascent, and if so, what they would make of so unusual a sight. Almost at once I entered low-hanging cumulus clouds; and the view of earthly things grew dim.

Then I entered a region of nimbus, or storm clouds, and was drenched by mist and rain.

This was a very uncomfortable feeling, for my clothing had long since burst from my rapid expansion, and was hanging in shreds and tatters to my person, like fragments of dolls' clothes adorning a giant.

Then I emerged into a field where I could see only a few stratus clouds in the distance. Here, although it was again dry, I commenced to feel the effects of a piercing cold.

Collecting my wits as best I could, I recalled that the air temperature is thought to decrease approximately eighteen degrees for each mile of ascent; and I wondered if my buoyancy would be such as to carry me to a height where I would freeze to death.

As the cold increased I found myself entering a region where I could see only cirrus clouds; and I knew that I must be attaining a great height. For I had recently read a statement by Dr. Robert H. Goddard that cirrus clouds are never lower than thirty thousand feet, and are usually a great deal higher.

Although I was now above the air stratum at which all storms occur, I was feeling increasingly miserable, for the cold was becoming almost unbearably intense. I knew that this cold would keep on increasing, provided astronomers' and meteorologists' estimates were true, until it reached seventy degrees below zero.

Of course, the friction caused by my rapid motion, which by now had attained an almost meteor-like velocity, was generating some counteracting heat; but even at that I suffered horribly.

At length I caught a glimpse of a distant star; and I realized that I was approaching the twilight zone, where the stars are always visible, usually supposed to be at a height of about fifty miles, and above which the temperature remains stationary.

I congratulated myself that I at least knew the worst. Although it was miserably cold, I was not likely to freeze to death.

Suddenly I came forcefully in contact with some very hard surface and broke through with a deafening crash. Then I felt myself rising a little further in space, and soon after started to descend.

This must be the sinking feeling that accompanies death, I thought, and, closing my eyes, I resigned myself to my fate. But it was not the end. In a moment I felt myself alight, none too gently, on what seemed to be *terra firma*.

I tried to look around, but all was dark.

I experienced a feeling of great weariness, and wondering dimly where I was, I drifted away into unconsciousness.

When I became aware of my surroundings again, I was lying in bed in what appeared to be a great hospital. Here was a room of tremendous proportions, almost bare of furniture, as a well-appointed hospital room should be. My bed seemed to be a half-acre in extent, and upon contemplating my own form I perceived that I, too, was unbelievably gigantic in stature.

I have been very ill, I thought. That is why I am in the hospital. Indeed, I must be very ill yet. This is an hallucination. But now that I have regained consciousness, no doubt things will soon readjust themselves and all will be normal.

And after all, what does it matter? Size is only relative, and it is of no consequence if things do seem larger, if I also am proportionately large.

Then the affair at the laboratory came swimming into my memory, and the whole adventure came rushing back to me.

For a few moments I lay thinking it over and wondering if it might not all be a dream; some fantastic nightmare. And I even tried to recollect what I had eaten at dinner and how I felt when I went to bed!

Then the nurse appeared and all seemed real again.

But such a reality. And such a nurse! Vast and high she towered over me, in a huge bulk that would indeed have been terrifying had she not worn a kindly and solicitous look on her expansive face.

I noticed that she had a rather fluffy and billowy appearance, and that her outlines were rather dim and poorly defined. She smiled as she saw that I was conscious and moved her lips as if speaking to me; but I heard no sound.

Perhaps I was deaf. No, that could not be, because my own voice sounded perfectly natural as I spoke to her.

"What place is this?" I asked.

Apparently she could not hear me, but she perceived that I was speaking and bent closer to catch my words.

When she was obliged to give it up she looked disappointed; then she placed her great hand on my forehead as if to determine if I had a fever.

To my great surprise, her touch was light as a feather. In fact, I could hardly feel it.

Then she moved about the room. I perceived that she moved so lightly that she scarcely seemed to touch the floor, in fact she seemed to float rather than to walk. She was indeed a strange being.

Presently she went out and I fell to trying the use of my arms and legs, to see if I had any broken bones or other serious injuries. To my relief, I found that I had not taken any serious harm. I now commenced to feel my strength returning, and I sat up in bed, wondering if I could get up and walk about. Then the nurse returned, and with her a great billowy giant that I at once recognized as the doctor.

Apparently the nurse was telling him of my futile attempts to make myself heard, for he also spoke to me as I perceived from the movement of his lips, and then he bent over me to listen for my answer.

I spoke, repeating the question I had previously addressed to the nurse, but apparently he caught no sound.

He examined me for bruises and broken bones, and then listened to my heart action. He had evidently attended me before. He made motions to me which I interpreted as indicating complete rest, and then he withdrew.

After drinking a potion which the nurse prepared, I soon fell asleep.

I IMAGINE I slept two or three hours. Shortly after I awoke, the doctor came in again, bringing two instruments resembling ear trumpets, except that they were considerably larger.

It soon appeared that one had the power of lengthening and the other of shortening sound waves.

Taking up one, the doctor placed it to my ear and spoke into it. I was shocked to find that his voice was distinctly audible, although of a surprisingly high pitch. Of course, I was unable to understand what he said, not being familiar with the language of this gigantic race.

Having satisfied himself that I was able to hear his voice, the doctor took up the other instrument and placed it to his own ear. Divining his intentions, I spoke to him and was soon gratified to perceive from his expression that he heard my voice. I judged from his amused smile, however, that it sounded very heavy and low-pitched, as compared to normal voices.

I suspect that the doctor had hoped to be able to carry on a conversation with me; not knowing that I came from a different world; and now that this difficulty of language presented itself, he was more than ever perplexed.

He conferred with the nurse, obviously explaining something in great detail, gathered up his instruments and hurried away.

When he was gone the nurse indicated to me that I was to get up. This I was able to do quite easily, although I felt very stiff in my joints and somewhat bruised and battered.

The only visible sign of bodily injury was a large lump on the top of my head. This was no doubt due to the collision I had experienced just before I lost consciousness.

But I was far from my old self otherwise. My size was something tremendous. Since all my surroundings were on a gigantic scale, however, I had no standard of measurement, but it seemed to me that I was fully a hundred yards tall, and proportionately large.

In spite of my great bulk I felt very light, and I moved with a buoyancy of step that seemed quite uncanny.

I now noticed that, like the nurse and the doctor, I appeared to be rather billowy in form and my outlines were also dim and indistinct.

Although I was not an invalid, it seemed that I was not to be dismissed from the hospital at present.

My nurse now conducted me down a long hall, where we passed through a great arched doorway out into the open.

The world that greeted my wondering gaze was an entirely new world to me. And such a new world! What I saw at a glance would take a book to describe.

Of course, my bewildered brain was unable to take in all the minor details at once. I imagine it was somewhat as if a South Sea Islander were suddenly transported from his primitive home to a great modern city. He would see a great deal at his first glimpse, but he would comprehend only a very small part of what he saw.

Time precludes any detailed account of the scene. Suffice it to say that all was moulded on a tremendously large scale, as though ordinary earthly objects were twisted into unfamiliar shapes and magnified a hundred times, with magnificent distances intervening.

The streets, the trees, the buildings—all were inconceivably gigantic.

At the doorway I stood spellbound, forgetful of all save the strange sight before me.

The nurse, of course, was unable to understand my frame of mind, not knowing that I was a stranger in a strange world. So, after observing me a moment with a puzzled air, she took me by the arm and conducted me to a rustic seat in the grounds, bade me be seated, and after regarding me rather critically, as if doubtful of my sanity, seated herself nearby and turned her attention to a book.

I, too, felt inclined to question my sanity, and in an attempt to compose my mind I closed my eyes and tried to think how it had all come about.

I WAS still half-convinced that it was all an hallucination, arising from a weakened condition incidental to a prolonged sickness. Perhaps the things about me were of normal size, and only my mind was magnifying them. But no! It could not be so, because there were numerous other differences and changes. Things were not only enlarged, they were otherwise entirely different from which I had been accustomed to. Then I went back over what I could recall of my journey to this new world.

I recalled how I had inadvertently caught the disk of Transite in my hand, in front of the little laboratory. How I had suddenly grown larger and apparently lighter before starting my ascent. And how I had passed rapidly from one stratum of cloudland to another, finally entering the twilight zone, crashing into some unseen object, and later losing consciousness.

Yes, it all seemed entirely real, and I tried to figure out what had happened.

First of all, the disk of Transite had manifestly affected the tissues of my body, altering their atomic density by enlarging the orbits of the electrons encircling the nucleus of each atom. Perhaps the groupings had also been rearranged to form atoms of more attenuated density.

At length I had become lighter than air. Then the surrounding air had naturally forced me to rise, and I had become a veritable balloon, ascending until I had arrived at a stratum of atmosphere so light and attenuated that it no longer forced me higher.

And here I was, surrounded by a race of people of a similar atomic structure, and living in this strange place under circumstances that to them, no doubt, seemed entirely normal.

Evidently the stratum of air beneath their feet, and upon which they moved and had their being, was as firm, compared to their structure, and the things of their world, as the earth is beneath our own feet.

In fact, all things of this world were so rarefied that they had been invisible to me as I approached from beneath, and no doubt, but for the retarded action of the Transite on my sight organs, would still be invisible. And now with my changed sight I was unable to see into the stratum below me, although I knew it must be less dense than air, and very rarefied air at that.

To say I was unable to see into it was not literally true, for I could penetrate it a little way. It had the appearance of very dense ice, or half-transparent glass.

I fell to speculating. If this stratum of air, so rarefied as to occupy a place at the great height of the twilight zone, seemed solid, how very attenuated must be the stratum that we were breathing, and which encircled us on all sides? But what had become of my little disk? And with what had my head come in contact so forcefully as to cause my lapse of consciousness?

It must be all true, I thought. I was now in a new world, one might say a world of higher things. But what was to become of me now? No wonder they had not discharged me from the hospital. Obviously I had no place to go.

I was indeed in a predicament. I had no friends, no home; I was unable to hear or understand the language and knew nothing of their mode of life. Where was I to turn? What could I do?

No doubt the hospital authorities were even now making frantic efforts to identify me and learn whence I came, and the manner of my coming. I must indeed be a riddle to them.

But how could I tell them anything? Even if I could speak their language, my story was so preposterous that it was hopeless to suppose they could believe it.

But perhaps they knew more than common people. Surely they had some wonderful inventions, as witness the sound transformers.

And what a trying task it was going to be to try to learn their language, since I could not even hear their voices without the wave transformer.

Of course, this language would be entirely different from ours, having no root words in common.

I wondered if they had a system of writing, and if it would be as complicated as ours; and what their social customs would be like.

Then I opened my eyes and fell to observing what was going on about me. It seemed strange to see the stars shining, although it was broad daylight. We were in a small park-like space beside the great hospital building. On three sides were streets and apparently business establishments.

Here the life of the community was going on before me.

The gigantic people were going to and fro, some on foot and some in great machines.

These machines were in some respects like our own cars, except that they seemed to glide along on the pavement instead of being supported by revolving wheels.

NOT for long was I left alone to observe and wonder at the strange life going on about me. For presently a large car drew into the hospital drive and I saw the doctor dismount and enter the building.

Almost immediately an attendant came to summon us to return indoors. The doctor greeted me affably when we returned and proceeded to show me a complicated instrument that I judged from his actions he prized very

highly. I afterwards learned that he was the inventor of the device, although several other doctors and scientists had taken a hand in improving it.

In some degree it resembled a telescope or field glass, with mirrors attached to each side and a handle underneath, after the manner of the old-fashioned stereoscope.

This mechanism was complicated with a great many attachments and adjusting devices that made it appear quite formidable. In spite of the doctor's motions and gesticulations I remained at a loss to know what this instrument might be for. Perhaps the doctor anticipated this, for he now produced a book that apparently combined a treatise on the structure of the eye, and a sales catalogue for the strange instrument. Although, of course, unable to read the text, I could understand the pictures and diagrams.

Fortunately, in the course of perfecting one of my inventions I had recently given considerable attention to the physiology of the human eye, and so I was able to follow what the doctor pointed out to me in the illustrations, explaining how we see.

As you probably know, rays of light pass from the object we see to the eye; pass through the pupil in the iris; traverse the aqueous humor and the crystalline lens, and after penetrating the vitreous humor, filling the large space within the eyeball, at length reach the retina, in which are imbedded the ramifications of the optic nerve.

Now, mechanically speaking, the retina is a sensitized photographic film. This film is exposed, receives the impression; the image is obliterated, and the sensitizing chemicals renewed; all with great rapidity. (I might say that recent experiments with moving pictures have established that this renewal takes place from thirty to fifty times in a second.)

Each photograph is transmitted through the optic nerve to the brain, where it creates, as we say, an image to the mind. Just what this process of creating an image in the mind is we do not know; for right here is the frontier of the great jungle of ignorance, beyond which man has not yet passed.

But I must not digress. As I was saying, the pictures revealed how an impression is conducted to the brain; and so far I was able to follow quite easily. But from this point they went on in a demonstration that was new to me.

They proceeded to demonstrate that the process of seeing might be reversed, and an image in the brain transferred to the retina of the eye.

It seems that in case no direct ray but only diffused light is allowed to enter the eye, no image is produced from without, but there are vibrations in the conscious brain, that for want of a better name we might call thought waves. These vibrations have a frequency or wave length so nearly the same as that of light that passing along the optic nerve they have the power of producing a chemical reaction similar to that of light. Thus the images conjured up in the brain are photographed on the retina.

Diagrams of an instrument in use, similar to the one at hand, revealed that it was designed to afford a view from without of what was taking place within a human eye. In other words, it was an instrument for visualizing a brain image.

To me this seemed almost like a fairy tale. It seemed more like necromancy than real science.

NO doubt I looked incredulous, but the doctor seemed to have full confidence, and he indicated that he hoped to transmit a message to me.

He proceeded to attach the instrument to his own head, applying his right eye to the end of the tube, the nurse assisting him the while. She placed a heavy bandage over his other eye, and under his directions made numerous adjustments about the mechanism. Then she directed me to draw close and fix my eye on one of the tiny reflectors.

Needless to say, it was a moment of great excitement. My heart beat wildly as I bent over the instrument. Like one at a séance, waiting for the appearance of a spirit, I waited in breathless suspense for that which I fully believed to be impossible.

For a while all was blank and then a picture began to materialize.

I saw a little crowd of people gathering at the edge of an open field. They were evidently in a state of excitement and curiosity, as one might expect to find people at the scene of an accident.

Then I perceived my own form lying prostrate on the ground, while blood was slowly oozing from a laceration on the top of my head. Some of the people were examining me and others were gathered around a hole in the ground near by, where apparently some object had been thrust up, leaving broken fragments at the edges of the opening, which were inclined upwards, as is always the case where there has been an eruption from below.

Then the doctor appeared, made a hasty examination for broken bones, felt my heart action, and questioned the crowd. Then he approached the opening in the ground and viewed it in a very perplexed manner, while the bystanders looked equally perplexed.

Evidently it was the general opinion that I had come out of the ground at this point in some mysterious way. Then an ambulance arrived and I was taken to the hospital.

The scene shifted to the then present moment, showing us engaged with the instrument. Then followed a sunset, darkness, and again sunrise.

(This indicates passage of time, I thought, and indicates tomorrow.)

Apparently the rest was prophecy. The doctor's car appeared in the hospital drive; the doctor and I entered. We passed along a strange road, and directly approached the open field that had been the scene of my recent arrival. The doctor and I alighted and approached the still open hole, and together we examined it carefully. Then the doctor looked questioningly at me, as if desiring me to tell him what I knew of the strange affair.

It was manifest that this was the manner of my arrival and that the doctor planned to take me to the scene on the morrow, in the hope that I could throw some light on what was now shrouded in deepest mystery.

After a moment he depicted a scene where I was in the doctor's place at the instrument, and the doctor was the observer; clearly indicating that I was to tell him of my part in the affair.

So ended the interview. The doctor replaced the instrument in its case, while I indicated as well as I could that I understood the message and was prepared to help clear up the mystery.

The doctor seemed pleased with his progress and departed.

Although at the nurse's insistence I went to bed early, I was unable to sleep. I lay awake for a long time, considering this strange new world and my own peculiar predicament. The thing that troubled me most was that I could not hear these people's voices, and they could not hear mine.

At length I decided that the action of the Transite on my vocal and auditory equipment had not been as complete as with the rest of my anatomy, and it occurred to me that if I could find the disk of Transite perhaps it would complete the transition of these organs.

The excitement of the day had been great, however, for I finally fell into a deep sleep of exhaustion, from which I did not awake until late the next morning, when the nurse came and urged me to get up.

Presently the doctor arrived; I accompanied him to the car and we went directly to the place which I had previously seen in the marvelous instrument.

I EXAMINED the scene with great interest. Among other things I found in the fragments of upheaved soil, a layer of some lighter colored substance, that appeared very hard and a little more transparent and brittle than the rest. I decided that this must have been the substance that had so cruelly bruised the top of my head.

I thought again how strange it was that this soil substance, which appeared to be of the consistency of soft earth, was in reality only so much rarefied air. But because of my own rarefied state, and the corresponding rarefied condition of all objects around me, this soil seemed to be in a normal condition.

After all, I thought, hardness is only a comparative term and no doubt there are other worlds, or, more definitely, other strata, where the rarefied air we breathe in this new land of giants would seem absolutely solid.

And there, half hidden in the dust, was the minute disk of Transite which I had carried in my hand all the way from the earth and which had, no doubt, fallen from my hand when I lost consciousness.

My first impulse was to pick it up and show it to the doctor. But suddenly the thought struck me that if I did so I might lose possession of it. If I could retain it, I thought, it might easily be the means of normalizing my voice and hearing.

I reflected that I knew but little of the ways of these people as yet, and although the doctor seemed very friendly and reasonable he might be the victim of some peculiar prejudice or superstition that would prevent his restoring the disk to me if I gave it to him.

So I decided to resort to strategem. I picked up several fragments of soil, and after examining them threw them carelessly aside, retaining only one in my hand. Then I stooped and picked up the disk, secreting it between my fingers, and held the other fragment in my open palm.

I regarded it a moment and thren threw it aside, retaining the disk in my great hand.

I perceived that it still retained some of its potency, for I felt a slight contraction of the muscles in my fingers. And how small it now seemed! Formerly it was nearly a handful. Now, in my enlarged condition, it seemed like the merest particle.

No wonder it had escaped the notice of the crowd and of the doctor! Even if they had seen it, it was entirely too small to seem of any importance.

Fearful that it might slip out from between my huge fingers, I surreptitiously slipped it into my mouth and carefully deposited it under my tongue, as I might formerly have done with a grape seed.

Having thoroughly examined the ground, we re-entered the car and returned to the hospital. As we entered the hall I was surprised to hear the doctor speak to an attendant.

This was the first time I had heard his voice, except with the aid of the transformer. Immediately I knew the Transite had done its work, and the doctor looked around in pleased surprise as I spoke to him.

Evidently the transition was now complete. Now, if only I understood his language we would be able to converse.

Then I took the disk out of my mouth and showed it to the doctor, who examined it with enthusiastic interest.

We repaired to my room and the doctor sent out for a large microscope and examined a fragment of the Transite very minutely, but evidently he could make nothing of it.

In the afternoon I was conducted to a large laboratory in another building, where I found the doctor and a number of other men who were his professional associates and government officials, I learned afterward.

THE doctor again produced his marvelous picture machine and invited me to tell my story, or at least I gathered from his gestures that such was his intent.

Glad of an opportunity to be of service, I submitted my eye to the eyepiece of the apparatus and proceeded to conjure up a series of recollections that I hoped would depict my former life and the surprising journey that had brought me to this new country.

First I depicted a scene on the street of my home town; and I could tell by the expressions of wonder and excitement in their voices that the watchers were seeing it all and were much impressed. They were now using a number of reflectors, one for each spectator.

They laughed with amusement at the tiny people of our world. I showed them the plant where I had been employed, and imagined myself and my associates at work in the great laboratory. Then I went home, visualizing the familiar interior of my own home. Later I conducted them to my own private laboratory, where I proceeded to experiment with the production of Transite. Following that came the scene were I made my involuntary ascent and beheld a group of incredulous faces. They stared at me as though I were a mad man or some incomprehensible creature from the jungle. Only the doctor really seemed to believe what he saw, for he smiled appreciatively and nodded to me understandingly.

They did not return me to the hospital but introduced a young man and turned me over to his care.

Through the medium of the strange instrument, which as near as I can translate they called a visuoscope, the doctor informed me that this young man was assuming the responsibility of becoming my teacher and companion; with his help it was hoped that I would learn the language and customs of the community and in due time become a full-fledged citizen of this newly-revealed world.

So I was installed in a large institution that seemed to be half-hotel and half-school. Here my companion,

who by the way proved to be a very agreeable fellow, proceeded to initiate me into the ways of my new life.

Learning to speak the language did not prove so difficult as I had anticipated; within a week I could handle sentences of three or four words. Then I took up the matter of reading and writing, and soon was a regular student, giving stated hours to study and learning to converse with my instructor and the doctor, almost as freely as though I were using my native language. The doctor came often to see me, and we had long talks together.

He was very much interested in me and my strange history, and since he was a man of liberal education and no little scientific knowledge I found him a congenial companion. As soon as I was able to master some scientific language we commenced to discuss the world from whence I came and the scientific status of this new society, of which I was rapidly becoming a member.

One day we again drove out to the locality that had been the scene of my arrival, and now able to converse quite freely we again discussed the cause of my ascension.

Taking up a fragment of the erupted soil, the doctor again called my attention to the lighter color and much firmer stratum that I had formerly remarked. This, he said, was the insulating layer and was no doubt what my head had collided with so forcibly at the moment of my losing consciousness.

"Insulating layer?" I said questioningly. "Insulation from what?"

"Well," he said, "it is to keep offensive sounds from issuing from the ground. It is laid down artificially, and its origin is a long story. If you will accompany me on my rounds tomorrow, I will try to tell you all about it, between calls. I am sure you will find it interesting." So the next day I accompanied him as he drove from place to place. And this is substantially the story that he related.

Two or three decades ago they began to hear strange noises issuing from the ground, although they were at first undecided whether they came from within the ground, or from above and only rebounded from the earth. By the way, they do not call the ball on which they live the earth; they call it something that sounds like "Zenyon," which is a combination of two words, meaning "our planet."

Apparently the sounds were signals; and scientists were at first inclined to believe that the inhabitants of some other planet were trying to signal to them. However, in spite of scientists and scholars, they were unable to detect any code.

Presently the messages became much more numerous; in fact they were going on incessantly, night and day, until it became evident that it must be the interchange of a great many messages.

I DID not interrupt his narrative, but I called to mind the work of Marconi and his wireless instrument and the later growth of wireless telegraphy in the Morse code.

Then he related how one day, some twenty years ago, a huge chemical tank exploded in one of their thickly populated industrial districts. The chemical was distributed over quite a large tract, saturating the surface of the ground and giving off a very offensive odor.

As soon as the excitement of the accident was over, it was noticed that the whole affected district was free from the signal noises, which by this time were definitely known to arise from the interior of Zenyon.

Resulting experimentation revealed that this chemical, which, incidently was very cheap and abundant, possessed the power of deadening, or more properly, intercepting and reflecting the sounds.

These noises were now becoming so numerous and incessant as to be very annoying, especially where quiet was desired; and it soon became the custom to insulate schools, hospitals and offices with this ill-smelling chemical. Because of its offensive odor, they soon learned to cover it with a layer of soil, or bury it beneath the foundations of buildings.

This process had the effect of eliminating the odor, and at the same time removing the insulating surface from the danger of being easily disturbed.

Although I was still unwilling to interrupt his narrative, I resolved that later I would tell him of the work of the English scientist, Oliver Heaviside, and together we could check up the dates, and perhaps verify my inference that this was the beginning of the so-called Heaviside layer.

I reflected that unfortunately I was not very sure of my dates. And as I had access to no reference books or other earthly sources of information, I would have to rely entirely on my own memory.

But I felt I would not be far wrong in placing it as the beginning of the present century that Mr. Heaviside announced his theory that there existed a stratum in the upper reaches of the air that acted as a barrier to the progress of electrical impulses.

I knew that the theory had since been adopted by practically all scientists, and that the well-recognized Heaviside layer played an important part in all radio theory and calculation.

Not long after this, according to the doctor's story, in localities that were not insulated the people began to hear what appeared to be human voices.

This caused a great deal of excitement, and every effort was set forth to ascertain whence these voices came. Of course, the language, if indeed it really was speech, was entirely unintelligible, and nothing of its origin had ever been learned.

He went on to relate how, a decade ago, the character of the subterranean noises underwent a rapid change. Perhaps I might more correctly say "sub-Zenyon" noises. Instead of code messages and supposedly human voices, there arose such a confusion and discordance of sounds, that they soon became a menace to health and to nervous serenity. In fact, the earthly noises rapidly became unearthly, and insanity and nervous breakdowns became the order of the day in all localities that were not thoroughly insulated.

As the doctor related this, I wondered if I would be able to find words in his own language to tell him of the wave of jazz mania that had enveloped our world. Later, while he was calling on a patient, I tried to marshal words from my still meagre vocabulary to describe the ample proportions of our great King of Jazz.

Then I fell to contemplating the lot of the poor twilight-zone dweller in some outlying uninsulated region, as he lay on his bed trying to sleep.

I tried to imagine the effect on his nerves of the typical performance of a jazz orchestra.

There would be the blare of the trombone, distorted by a derby hat; the wailing of the clarinet, the snorting of the saxophone, and perhaps the jingling of a cowbell, and the bang of the bass drum, as the orchestra sought to render more pleasing the strains of the good old "Rock of Ages," or some one of the time-honored classics.

But how was it that these huge people could hear radio messages unaided by any mechanical transformers or receiving sets, when radio had never been audible to our unaided ears? Here indeed was something to puzzle over until I remembered that their auditory equipment was tuned to an entirely different wavelength, as was demonstrated by the fact that they had been unable to hear my voice until it had undergone a complete transition. And I reflected that it was perhaps only coincidence that they happened to be attuned to the same group of wavelengths as those utilized by our radio.

IT may be coincidence, but it certainly was a happy coincidence.

Undoubtedly I would now be able to hear and understand this broadcasting that was now being turned back by the Heaviside layer. I resolved to lose no time in finding an opportunity to test my ability.

Then I thought hopefully, that although I was a stranger in a strange land, I might yet get news of what was going on in my own lost world; and I meditated on the possibilities of constructing an apparatus that would magnify my voice so as to make it audible through the receiving sets at home. I was deep in a day-dream of the astounding broadcast program I would be able to put on the air, when the doctor returned from his call, and took up his narrative. As time went on, he continued to relate, and the noises became more and more of a nuisance, the government decided to assume the task of insulating the whole country at public expense, in much the same manner as governments carry on reclamation and flood prevention projects.

A great many large machines were built, and put to work raising the topsoil, laying down a thick layer of insulating compound and replacing the soil. This chemical entered into combination with a certain amount of clay, forming the hard substance that I have described. In this way the insulating, or as earth dwellers call it, the Heaviside layer, was soon extended to even the remotest districts. The entire population was now protected from jazz.

"But when a hole is made through the hard layer, can one still hear these disconcerting noises?" I asked. And I was assured that they were still audible.

"If we pass by where there is excavating for building going on," said the doctor, "we will stop and listen. I suppose it will be just like news from home," he finished with an amused laugh.

As we drove on we watched for signs of excavating. For some time we could see none. At length in a field adjoining the road, we saw some workmen digging post holes and setting a fence.

Thinking that these holes might be deep enough to penetrate the Heaviside layer, we investigated.

As we approached and explained our errand to the workmen, I noticed fragments of light colored material taken from the holes and recognized them as the Heaviside layer.

Stooping low, I applied my ear to the round hole.

What was my surprise and joy to hear a well-remembered, measured and well modulated voice, saying, "This is W. I. O. D., Wonderful Isle of Dreams!"

Then a bit of commotion, and another voice said, "The Journal covers the South like the dew." Then, as I was becoming interested in a discussion of a national monument a third station came in saying, "This is the Capitolians at Winnipeg, Canada."

It was indeed like a message from home. For the first time since my arrival in the twilight zone I felt that I was not hopelessly lost in space.

I forgot the doctor. I forgot the waiting workmen, listening to these familiar sounds from my native land.

Then a jazz band broke in, and everything of interest was obliterated.

"I must devise an eliminator of some sort," I thought, as I raised my head to find the doctor pacing impatiently back and forth, and the workmen going on to start other holes. "Yes, it is the voice of my people and the scourge of my race," I said as we went back to the car and continued our rounds.

I translated for his benefit as best I could, what I had heard. The doctor was so interested, that during the following week he prepared an article, with my help, for one of the leading scientific journals.

In this article he told something of the earth, and of our system of broadcasting; and of my ability to understand and translate these strange noises that had become so numerous of late years.

The journal accepted the article for publication only after the most painstaking investigation; and it was received by the reading public in very much the same mood as people usually receive the announcements of certain eminent scientists of excursions into the spirit world.

After this episode, I turned my attention more and more to scientific investigation, in the hope that some means might be found to return to my own people.

Very soon my education had advanced so far that I was able to enter a public university, and dispense with the services of my tutor-companion, who was also scientifically inclined and who had accepted service in the doctor's employ only to serve as a means of earning the wherewithal to continue his researches.

He now joined the doctor in organizing a company to publish the story of my earth origin, and my adventures in space. This I had already written in the form of an autobiography and my erstwhile tutor set to work to render my efforts readable.

Although they only hoped to have it recognized as scientific fiction, they hoped it would be a good seller, and perhaps pave the way to some really useful scientific investigations. The doctor spent a great many evenings with me, listening, interested and fascinated, to my halting descriptions of things in my own country.

With my inadequate but rapidly increasing vocabulary, I told him of winds and waves and Ouija boards; of negroes and Nordics, and the thousand and one other things that I felt would be of interest to a stranger.

And afternoons, when his practice would permit, he took me out on sight-seeing journeys that to me were veritable exploring expeditions.

I ONLY wish that I had time to tell you of some of the wonderful things I saw: sights rendered the more interesting by the fact that these twilight dwellers

were in a great many ways much further advanced scientifically than we are. And they were able to utilize the rays of the sun for power and chemical action much more fully, owing to the fact that here the rays had not yet been weakened by passing through such a thick blanket of air.

The doctor never tired of explaining and demonstrating the things that I didn't understand.

I think perhaps their boldest stroke in scientific manipulation had to do with their long distance transportation system, and since this transportation system has to do with our winds, and is the cause of a great many of them, I am going to tell you a little about it.

I am aware that this will necessitate a little explaining, and in order to follow me, you will have to try to visualize the situation rather extensively.

You know that directly above the earth, and far below the region known as the twilight zone, are the strata of the winds and clouds. Here the winds and storms rush back and forth, often high above the surface of the earth; now here, now there, apparently without rhyme or reason. But above the realm of the clouds and winds, in this region of the Heaviside layer and the twilight zone, where the stars are visible all day, there is a zone of eternal quiet.

Now these people know of the turmoil that is going on beneath them, even more fully than we know what is directly below us. They, however, do not know how deep this zone is; in fact they suppose it to extend, with gradually increasing density, to the very center of the earth.

Long ago, in fact in prehistoric times, they found that they could descend into this moving stratum by means of deep shafts, and, enclosed in stout diving-bell-like enclosures, made of a very heavy substance, drift about in the wind currents, as we might in a vein of flowing quicksand, or a subterranean river, if we could locate one deep under the earth's surface.

Although the sun's rays that penetrate to the earth pass through these strata, they are regions of comparative darkness to these people, whose eyes are accustomed to the unfiltered sunlight of the higher region.

Now, as we have long known, most meteorites that we see as falling stars burn themselves out in the rarefied atmosphere of the twilight zone; but now and then one penetrates nearly to the earth. On rare occasions some actually reach the earth.

So, occasionally they saw a meteorite penetrate the region of the clouds, illuminating a large space and revealing the interior of the world. In that way they became, to some extent, familiar with the region, and later invented powerful searchlights that could penetrate the darkness to a considerable distance; and thus they were able to find their way in their subterranean craft from place to place.

But the uncertainty of the winds left them without power to regulate the direction or speed of their journeys. I am speaking now of a very early time in their history, for long ago they discovered a method of creatting and directing winds to suit their own purposes; and as you will see, the secret of their process is comparatively simple.

We know that when the air in any locality is warmed by the rays of the sun is expands in bulk, becoming correspondingly lighter, and is forced upward by the pressure of the surrounding and heavier air on all sides. Cooler air, coming from a distance to take the place of the rising warm air, creates a wind. So, if you wish to have a wind blow in any particular direction, it is only necessary to apply sufficient heat to the air in that locality, and very shortly the wind will set in that direction.

Of course, monsoons, and the trade winds, as they are called on the two sides of the equator, are a somewhat different proposition, but in a general way they also are subject to the same rules.

But we are only acquainted with the bottom of these disturbances. There is, so to speak, another side to them. Up above the current of warm air, being relieved of pressure, expands and rushes back to take the place of the sinking cool air.

You can readily see how the people of the twilight zone were familiar with the winds that blow away from a warm region and toward a cool one. And they came to know that if for any reason a locality becomes temporarily very cool, their heavy air will settle to lower regions, and the wind will set in that direction.

A number of centuries ago one of their scientists by the name of Orend invented an apparatus that was able to broadcast a form of energy having a wavelength so nearly equal to that of the heat that accompanies the sun's rays that the waves interfered (heterodyned, we would say) and a portion of the sun's heat was intercepted. This caused an increased warmth on the surface of Zenyon, and a correspondingly cooler region in the wind-swept regions below.

AT first this achievement was of scientific importance only from a purely academic point of view, and was not put to any practical use. But at a later period a group of practically minded capitalists built some large units of this apparatus in order to heat certain winter resorts which they were exploiting. They were surprised and pleased to discover that the winds in the regions beneath always set in that direction where the operator was working.

Consequently, the government subsidized the venture, turning it to a new use. And huge machines were installed in various localities throughout Zenyon; that is to say, their entire world, for it was the entire habitable world to them.

Now, in the event that there was to be a great convention or other gathering at any designated place, the apparatus was set to work a day or two in advance of the appointed time, and soon conveyances from all directions came voyaging in on the winds.

Later the operation was systematized; and on days specified in advance the winds were caused to blow toward certain localities to suit the traveling public.

Occasionally, in case of great emergency, when some person of high governmental position or of great wealth wished to travel in haste, a large area would be cooled very rapidly, causing a tornado or cyclone (on earth).

So you may know, when there is an especially violent wind, that some inhabitant of Zenyon is traveling somewhere in great haste.

As soon as this apparatus is set to work in any locality, the earthly observers report that a disturbance is indicated by the barometers, but the cause of these areas of high and low pressure has always been a very difficult problem. Our earthly meteorological experts know these succeeding areas result in storms and high winds, but they have constituted a perplexing problem.

As I was saying, I took up a course of study in one of the larger colleges; a great university it was in fact. And it was while there that I became interested in the intercollegiate sports that were a part of the activities of this and other institutions.

I was interested only as an observer and spectator, for I never attempted to take any active part in them.

At different seasons of the year the sports differed in nature, in the same manner that they do at our colleges. We have track meets in the spring and football in the autumn. During the midsummer months they indulged in intercollegiate racing, and on one memorable day in September the doctor and I went to see a great race between our university and the largest southern college.

This contest took place at the southern college, and ours was the visiting team.

These races were somewhat in the nature of boat races, the opposing team descending into the wind stratum and embarking in specially constructed and very swift navigating devices, somewhat like those used for ordinary travel.

Then they launched out into a great wind, especially created for the occasion by a concentration of cooling devices. They raced over a set course amid a great deal of enthusiasm. I had been told that it created a very exciting spectacle, for the onlookers assembled in an immense grandstand and provided with a battery of huge searchlights that penetrated the sub-strata and permitted them to follow the entire race.

The doctor was a great racing enthusiast and took keen interest in these games; and as this was a world-championship event we were both in a high state of nervous tension as we took the places that had been reserved for us. Our eyes followed the united beams of the great searchlights that illuminated the activities below, as a spotlight reveals a scene on the stage.

An announcer with a megaphone announced that a huge space in the lower regions had been cooled by such a concentration of refrigerating devices as had never before been equaled in the history of intercollegiate sports. And he prophesied that the resulting wind would assure the onlookers a remarkable exhibition of speed.

He was also pleased to announce that the new searchlights installed for the occasion were of a new and improved type. They were being used for the first time, and it was confidently hoped that they would reveal every detail of the maneuvers of the racing conveyances.

Not until this moment had I ever given a thought to the effect these winds might have on earth-dwellers.

Then, by the air of the great lights, we saw far in the depths, and amid hurrying clouds, the two craft maneuvering for position. It was a wonderful sight, and a vast murmur of surprise and appreciation went up from the multitude in the great grandstand.

The two craft, gay in fresh paint and bedecked with their respective college colors, sped along in and out amid the hurrying clouds, which burst into resplendence as they entered the beams of the great lights and faded as quickly when they passed on.

The backers of the home team rose *en masse,* and amid wavings of a host of banners gave their time-honored college yell and then subsided into their seats, while we of the visiting college rose and, under the direction of our animated cheer leader gave no less enthusiastic and lusty encouragement to our own team.

THERE followed a few moments of tense interest, as the teams were coming into line for the start. But while all others were intent on the race, I followed the light rays far beyond into the gloom in the vague hope that they might reveal traces of earthly things—perhaps an airplane or a balloon. And as I gazed I saw, or fancied I saw, the shoreline of a sandy beach.

"What is that away beyond the first craft?" I said to the doctor. "Can it be only the edge of a different kind of cloud?"

The doctor took his attention from the preparations for the race for one fleeting moment and appeared to penetrate the gloom beyond. I thought his voice was slightly tinged with annoyance as he answered: "I can't see anything unusual." And then, as if struck with a happy thought, he took his field-glasses from his bag and handed them to me, saying with his old-time courtesy: "Here, try this. Maybe you can pick out the center of gravity or some equally interesting object."

Then turning again to the scene before us, he said with some excitement: "There, the race is on! Never mind the glasses now we can try them out later." I believe he promptly forgot both me and the glasses.

I also was in a state of great excitement, but an intercollegiate race had no power to hold my interest. With fingers that trembled with nervousness, I adjusted the glasses and focused them on the dim end of the largest beam of light. Like a moving picture thrown upon the screen, the world I used to know came swimming before my eyes.

A seascape; white-capped rollers; the blue depths of the Gulf Stream beside the lighter green of the shallow tropical sea; then the crooked contours of a long beach, and a bright expanse of what was unmistakably sandy land, fading into the distance.

"We are pulling away from them! We are pulling away from them!" came the doctor's excited voice in my ear, but I paid no heed. I could hear my heart throbbing in my ears, and my hands fumbled with exasperating awkwardness at the focusing mechanism.

I experienced a demoralizing moment of fear that in changing the focus I might lose sight of the earth and not be able to find it again.

But in the hope of getting a better view, I lengthened the instrument a little more and was rewarded by the sight of a small island and a ship.

Then another slight adjustment, and here at last, in spite of the great distance, were real details—but details such as I wish never to see again. I witnessed a scene of such horror that it seemed to freeze the very marrow in my bones.

Automobiles, houses and even people were being hurled through the air. Trees were being torn up by the roots and carried away, and the very sands of the beach were being hurled into space.

The waves of the sea were lashed to foam, and great billowing rollers bore helpless and half-submerged ships of all sizes, with terrific speed toward the land.

Then of a sudden the shoreline disappeared, and the sea rolled over the land, bearing the broken and tumbled ships out over a broad expanse of waves, where a moment before was solid ground, obliterating for a moment, most mercifully I thought, the scenes of death and destruction that were going on there.

(*Continued on page* 173)

Across *the* Void

A Sequel to "Out of the Void"

By Leslie F. Stone

Part II

LIFE would be very much simpler if all the peoples of all the worlds learned a means to let their minds "speak" for them—that is, if we also learned how to close our minds against outside intrusion. There are those who are playing with the idea of telepathy quite seriously, and it certainly is not beyond the realm of possibility that it will some day be established as a science. Thought transmission and reception certainly simplifies matters for our space-travelers beyond description. The second instalment of Leslie F. Stone's sequel to "Out of the Void" is a thrilling tale of Moura-weit's experiences with the variously civilized beings of the other planets.

WHAT WENT BEFORE

RICHARD DORR, who, with Dana Gleason, left the earth on a test voyage in the space rocket invented by Professor Rollins, returns to the earth more than twenty-five years later and visits Walter Kington. He brings with him, on this visit, three Abruians, one of each of the three races—golden, bronze and silver. With them also comes Elsie Rollins, niece of Professor Ezra Rollins, and her son Ezra-weit.

After the preliminaries are over, Richard Dorr tells Kington, what seems to him at first, a fantastic story of his trip to Mars, which landed him on Abrui instead; of his experiences on Abrui, in conjunction with Dana, whom he marries, and about their struggle to defeat the self-appointed tyrant of that world, and a return of these people to their rightful places.

But Richard Dorr and his companions have come to convince Walter Kington, and through him the entire world, of the marvelous commercial possibilities of space travel and particularly of the advantageous exchanges of minerals between earth and Abrui. Walter Kington becomes enthused over the idea, and summons some of the most eminent and influential people in the world to hold conference with these people who have conquered space.

As a result of the conference, the *Yodverl*, the Abruian space ship, is taken out of its hiding place and the members of the conference are taken out on a test flight, to be further convinced of the verity of Richard Dorr's statements. Final arrangements are made and contracts are signed for the first commercial interplanetary line, then Kington and five ambassadors with their families set out for Abrui.

Several weeks later they land on Abrui and soon Elsie Rollins-weit tells the story of how Moura-weit came from this distant planet to deliver Dana Gleason's message and how she and her uncle, the old professor, started back with them and landed first on Venus, because the professor wished; then how he gets lost there.

CHAPTER VII

Three Bad Days Pass

UBCA, I knew, could see better in the dark than I, since the Abruians have that faculty of seeing almost as well by day as by night. I never did become wholly accustomed to the fact that their eyes glow like those of a cat's in the darkness, but now I was thankful for it.

I was imagining all sorts of things that might happen to Uncle Ezra. He may have wandered beyond the city and become wholly lost in the grasslands or he might have met one of those terrible Venerians who had either killed him or taken him prisoner, or else one of them may have stepped on him in the dark, maimed him and left him there unable to call for help. Had I known then that the creatures never stepped out of their buildings with the coming of night, I would have been saved these fears. We found the air was very cold and damp, for a heavy mist had dropped from the clouds above and left the skin feeling clammy and chilled. That added to my fears, for Uncle might contract a cold even though he escaped other dangers.

Had I been alone, I would have run wildly across the square, possibly missing him altogether, or else lost myself in the maze of buildings, but Ubca took charge of

He did not take them beyond the anteroom, but seated himself at his desk and faced the three insects, who ranged themselves before him, paying no attention to his companions, who had come behind and unobtrusively took chairs against the wall.

the search. He did not believe Uncle had gone far. He suggested we circle the square, beginning close to the *Yodverl* and widening it until we had searched the entire plot and then the city. It was a wise plan, for we found him in our second circle after we reached the first of the buildings. And there he was kneeling on the cold, damp ground chipping away with a little hammer and chisel at the side of a great edifice.

In a bag at his side Uncle had a number of specimens he had obtained in this manner. He began to remonstrate when we tried to draw him away. "I want only half a dozen more samples," he cried peevishly as we brought him to his feet. "See, it is as I figured—these buildings are of sand compressed so closely together they are harder than duralium! Once this world was entirely covered with water and its action wore the surface rock to sand so it would necessitate digging deeply to reach the bedrock itself. These creatures, therefore, use the sand by compressing it under terrific pressure for their bricks. Look, here a piece of sand has crystallized. I must analyze these particles and discover their bases!"

Again he insisted that he must gather more, but we could not allow him to do it. Even so he was shivering from the cold. Ubca took his cape from his shoulders to wind about the old man. At last we prevailed upon him to return to the ship with us, but before he had taken half a dozen steps he became too weak to walk. Ubca picked him up as easily as though he were a child and carried him to the *Yodverl*. Urto saw us coming and went indoors to prepare a hot bath for Uncle, having known what to expect, and in a short time Uncle Ezra was in it. Then he was put to bed between warmed covers with hot pads and a hot medicinal drink that was administered after he had been rubbed down with a salve.

He was already commencing to sniffle and by morning, despite all our precautions, he had developed a bad cold. Even the wonderful medicines of Abrui could do little to help him. I had not realized it, but the excitement of this trip had already made its inroads upon the professor's health, and now his resistance was low. I brought out my own medicines from my emergency kit, but it was all of two weeks before we could break the influenza that set in. It was an anxious time for us all and I was fearful of losing him. Once it had appeared, his old frame would never be able to recover. That sickness was really the beginning of the end, but I did not want to think it then. It was really the application of the radio-active particles in the salve that saved him from dying at that time.

After the scare that night, there was little rest for any of us. I spent half the night beside Uncle and several times Ubca and Urto had come to see how he fared. They were also worried over the fact that Moura had not yet returned and were in a quandary whether the door of the ship should be closed or not. It was several hours after we had found Uncle that we received messages from Moura. Never before had he given me a message through the medium of the brain, but now suddenly I felt a comforting glow sweep through me that told me all was well with us. Looking at Ubca, I saw that he too had gotten the message. He smiled down upon me and then went to close the *Yodverl's* door.

In the morning we found Uncle Ezra in a bad fever and I forgot everything else in my worry for him. Occasionally I went to the doorway of the ship for a breath of air. Moura had not yet returned. It was three days before he came back to us. Looking out into the square, I could see an occasional passer-by, one of the twenty-foot monstrosities going about his business, paying no attention to the strange machine in the square. It was hard to understand their lack of curiosity about us, but later, when Moura returned, we were to learn that we were not entirely strangers to them, since with their marvelous telescopes they had been able to inspect the entire universe and knew all there was for them to know about us. Had they had the desire, they could have gone into space, but they knew no need because their instruments gave them all the details they required, and they could send their minds into the wide expanses more easily than they could their unwieldy bodies.

When Moura returned, he told us something of these wonderful telescopes, and he had not only been able to look into any world he wished to see, but he could also peer into the minds of all the creatures that inhabited these worlds. It was there that he had looked across the wide sea of the outer void upon the planets that encircled the great binary star, Alpha Centauri. There he had glimpsed the creature, who was a counterpart of the man he had been in the past in all but appearance, whose mind was exactly attuned to his own, and now he longed to go to him, to aid him by teaching him the error in which he was living!

How slowly these few days passed. There was no change at all to be seen in the sickroom, Uncle either tossed and turned or lay in a strange state of coma. There was nothing we could do but attend him, but he did not know one of us from the other. On the third day Ubca suggested that I take a walk outside. Uncle Ezra was sleeping fitfully, and Ubca said that I needed a change. There was nothing I could do for the sick man that Urto could not do, and I did need the exercise. Protesting at first I went out in the end. I felt timid about doing so, but Ubca pointed out the fact that our hosts meant us no harm, and since Sa Dak did not return he said that we would also be safe in the city.

CHAPTER VIII

The Venerians

VENUS, although smaller than Earth and with a surface gravity of .20 less than that of Earth. caused small difference in our corresponding weights except that we felt better for it, as though we had been relieved of a few surplus pounds. The thick vaporish atmosphere reacted pleasantly upon us. In the three days on the planet I found my skin had improved; there was fresh color in my cheeks, something I had never had in the hot, dry African climate.

Slowly Ubca and I crossed the square. We passed two Venerians who paid us no heed except that they appeared to go out of their way to avoid us, possibly fearing they might unwittingly trample us down if they came too close. We arrived at the foot of the great building into which Moura had been led but we did not seek entrance, walking around it instead. A wide avenue, grass-covered as the square was grass-covered, ran the length of the building, and beyond another square opened up, surrounded by buildings on all sides. Here we saw a number of young Venerians in a group with a single adult in charge of them. They were of varying

sizes—from three to fifteen feet in height. They were playing a game, for two of them ran about in a small circle and all were shrieking in various pitches. They stopped their game when thew saw us, but like the adults made no move to draw near; they watched quietly with their saucer eyes as we passed through the square.

We had noticed that all the creatures seemed of a single sex, and Moura informed us later that such was the case, that each of the beasts, like life of a lower order, possessed both the male and female regenerative organs so that all were capable of reproducing their young. However, they had devised means for keeping the population of their cities stable. The four cities of the globe had been built originally to house a certain number of beings, and never was the populace allowed to increase beyond that number, one birth being permitted for one death. Thus only at the death of one member of the community was another to be conceived, and since they knew death only through the medium of old age, having no disease or accident, it pointed out the fact that one individual gave birth to one single offspring during a lifetime.

As we continued forward we were both astounded and amazed at the loveliness of the tremendous buildings, so ponderous and yet so graceful. From the air we had not been able to see the full wonder of them, and it made us question that such atrocities as the Venerians were, could erect buildings of such delicacy and beauty. Nowhere did we see any activity except the appearance now and then of one of the inhabitants bound in a leisurely fashion for some other edifice than the one he quitted. Nor did we find any section in which commerce might have been conducted—no shops, no dispensaries of any type. And we found later that there was no commerce, simply because there was no need for it.

What land there is on Venus is comparatively small in proportion to its water area, consisting of two islands of modest size, upon which were the four great cities. No ships connected the islands, which were far distant from each other because there was no inter-exchange of trade, each city communicating with the other by means of the mind. Each city was complete in itself.

Once ships had plied the oceans, but that was early in Venerian development and there had been trade between the two island continents then. Now each city produced all its own simple needs, for in the millions of years of their civilization—and Venerian history is old—they had done away with all their wants excepting the simplest. Wearing no clothing, needing no ornaments, with furniture as substantial as their buildings, each city required but a single factory to produce their foods that were compounded chemically from the ocean water, sand and elements of the air. And so perfected was the machinery that extracted the food that it needed but a single attendant to control and replace its simple parts that the machine, itself, manufactured.

The lives of the Venerians followed a simple pattern, the day spent in gleaning all the knowledge of the past and adding to it their own great discoveries, eating once daily and sleeping through the night was the program. Having no passions, no hates, no fears, no desires, they knew no lack of these emotions. Contentment, happiness, sadness or sorrow was likewise not for them, since they knew not its meaning, being simply a phlegmatic people, who took each day's events for granted.

Finding that the buildings stretched for miles on all sides we decided to retrace our steps to the space-flyer. The thought that Moura-weit might have returned, quickened our steps, but we found everything as we had left it. Uncle Ezra still slept his uncomfortable sleep. There was little more for Ubca, Urto and myself to do but swim, eat, read, talk and look in on Uncle occasionally. I had brought a fairly good size library with me of books I had always wanted to read, but never gotten around to. Ubca was reading one after the other so as to better his knowledge of Earthling habits. And I, in turn, was learning more of the Abruian tongue. So simple were the rules, so little of the complexities that make up most of the languages of Earth did it contain, that I was learning to understand a few sentences and something of what the men said when talking among themselves. Then came the relief, when suddenly that night, Moura appeared at the entrance of the building he had lived in for three days. He came hurrying to the *Yodverl*.

Apparently, there was much to tell us.

CHAPTER IX

Life Upon Venus

HE came alone and entered the space-flyer with no more ado than if he had been gone only an hour. When he learned that he had been gone three days he was surprised. There was a faraway look in his eyes as though he had not yet returned from those vast realms he had been exploring with his Venerian host. He was all regret on learning of Uncle Ezra's condition and hurried to his bedside and tried to do what the three of us had not been able to do. He met with little success, but strangely enough I did feel better that he was in charge, as if he could perform miracles where we had failed.

When Ubca told him of what Uncle had surmised in chipping stone from the sides of the buildings he was astonished at how closely Uncle had arrived to the truth. And he told us something of the geology of the planet and the genealogy of its beings.

For billions and billions of years the world had been completely submerged under the waters upon which the planets of both Earth and Mercury, as well as Sol, caused great tides and gradually, throughout the ages, the water's action had worn down the surface rocks to sand, throwing the sand into piles and eating deeply into the solid stone. Volcanoes erupted beneath the subsurface, and their excretions were in time ground into small particles, too. Eventually the water built up the two islands entirely of sand, upon which life from the waters crept to form the grasses and planets. The Venerians, then creatures of the water, came out of the ocean to browse on the grasses. They had been larger then, but gradually lost some of their size. Their long proboscis, or trunk, had been evolved when they were water animals coming to the banks to feed on the grass by thrusting the trunk containing the mouth into it. With it they learned to grasp, and so fingers evolved at its end. Their breathing was accomplished through slits just behind the broad ears, which, once having been gill slits, had changed their construction when the beasts took to land.

In the same manner the small arms dropping from

the shoulder, which had once been used for grasping prey in the water, developed into arms and hands for use on land. As their brains grew, their first land settlements were established, but it was not until they had progressed many thousands of years that they learned to make bricks of the sandy bottom of the sea, and later to separate the ores from the sand. Several millions of years went by in which they attained a higher degree of civilization, went to sea in ships and built their great cities, and as they grew in intellect their present manner of living was evolved.

Learning to compress the sand and smelt the ores, they also discovered the means of making glass for the lenses of their telescopes, by which they could see beyond the blanket of clouds that enclose their planet. They discovered the ore veins below the ocean beds and with great machines were able to dive below and bring up the precious metals and bedrock, but they continued to use compressed sand for building purposes because of the hardship of bringing the solid rock to the surface. The colors in their edifices were due to the natural hues of the sand, which their ancient forebears had blended so beautifully and artistically.

During the month that we stayed on Venus, waiting for Uncle Ezra to fully recover from his illness, Moura and Ubca went a number of times into the buildings, but I went only twice, not wishing to leave Uncle for long. Besides, the two visits to the giant rooms of the azure building, with its great array of giant instruments and mechanisms, were enough for me. I looked into their telescopes, which are vastly different from our own, and saw many of the weird forms of life inhabiting worlds billions of miles away. The sights were overpowering, and I preferred to look no more.

Moura, however, had learned several valuable lessons in the laboratories. In his own laboratory he had often been at work on several machines with which he hoped to improve the *Yodverl,* but now he discovered where his own mistakes had lain, and he was working feverishly to produce the instruments he needed. From the Venerians he obtained whatever materials were necessary to make him free to work in the way of metals. And seven days after his return from the azure building he declared his first machine was finished. It seemed a strange contraption to me, but with it he expected to create an electro-magnetic field whereby we would no longer suffer from the lack of weight out in space.

To set the machine in place necessitated the pulling up of the tiled floor of the anteroom, under which there was a space of about six feet deep and extending all the way under the living quarters. In designing the ship, Moura had purposely left this space vacant for just this moment. The machine they were going to install greatly resembled a large radio layout, with a formidable array of tubes and coils on its head. The three men worked furiously to install it, keeping as quiet as possible so as not to disturb Uncle Ezra, who still had a temperature of more than 101 degrees. When the instrument was set, the tiled floor was put back on its supports, but a small manhole to one side of the room was left as a trapdoor to provide ingress to the cavity below.

MOURA was more than anxious for the trial flight of the instrument, but we feared the least movement might affect the sick man, so he had to forego that until the professor was almost well. Thereupon Moura went back into the laboratory immediately to work over a second machine, the meteorite deflector, but that was a delicate piece of work and was not completed until we were out in space again.

Urto was also having his problems. The food supply was running low. There was still a large amount of fruits and vegetables in a good state of preservation, but the grains, meal and flour were running short, and the feed for the small herd of mitu we carried was almost depleted. Daily the cattle had been led outdoors to graze on the grassy floor of the square, and they were fat and well conditioned, but there would be no fodder for them when we left Venus, so Urto fared forth to find what he could find.

He was gone for two days with supplies to tide him over, and a rubber cover to protect him from the night. He came back to report that he had found a fine variety of grass that was alfalfa-like that would make a good hay. He had also discovered acre after acre of a plant closely resembling early wheat, and also an oat-like grain. All these were growing wild, since the Venerians do not cultivate them, using only their chemical concoctions for food, and these in liquid form.

How the Venerians knew of our plight we could not say, since no one had spoken to them of it, but the day after Urto returned from his quest we were surprised to see two of the mammoths coming toward the ship, bearing two large sacks on their narrow shoulders. These, we found, each held fifty gallons or so of their liquid food, which they presented to us, and then made their departure as rapidly as they had come without waiting for our expression of appreciation. Urto and Ubca set about to freeze the liquid, which was contained in rubber-like bladders, solid, so it could be stored easily in our refrigerators against the time when we should have need of it. One taste of the odorless, colorless fluid made us ardently hope that we would not need to resort to it. Moura explained that it contained all the necessary chemicals for the use of the body, but he believed it would be best to dilute it before partaking of it, since it was somewhat richer in content than our own bodies required. A Venerian lives on a gallon a day, but Moura, who had drunk it during his three-day stay with them, found that a pint had sufficed him.

After they delivered the stuff, the Venerians paid no more attention to us, and did not stop the men when they went out to the savannahs to reap the bountiful crops they found. Ubca accompanied Urto on the second trip, taking reapers that they had hastily prepared from some of the Venerian metal, honing them until they were knife sharp. Four days they spent in cutting down the grains and alfalfa, which they left to dry as best it could in the fields. Later, when Uncle Ezra was well again and we had gone out into space to test our new gravity machine, we returned to the grasslands to reap the harvest which had first to be more thoroughly dried under our radium light before it could be threshed and ground to meal.

And happy we were when we saw the crisis of Uncle's fever pass and he had begun to convalesce.

So at last we were ready to leave the square. We had to climb until the instruments were no longer affected by Venus and the new machine was turned on. At first nothing happened! Out of Venus's gravity control we were without weight again! Moura descended below to make adjustments, and as he worked we be-

came unbelievably heavy, so much so it was with hardship we raised even a hand. Moura quickly readjusted that and we were our normal weight again. Urto's delight was unbounded when he knew that even in Space dishes and liquids would stay where they belonged.

When it was decided that the new invention was perfected we headed for Venus, and this time landed in the meadows where the cut grain awaited us. We all joined in the gathering, except Uncle Ezra, of course. I found I could help in tying up the bundles. We were a tired gathering that first night, and not long after we had eaten we all retired. We were there over a week, for none of us were adept in this new type of labor, but at last we had the grains and fodder ready to be stored away, and the ship was well provisioned again. In the interim I had found a berry patch and brought some in for a test. They were examined and declared edible, as were some beans and a spinach-like vegetable that Moura discovered, and so we filled every available receptacle with them.

Next we turned to the river that meandered through the land, and dropping beside it we pumped enough to refill our tanks. It was found to be slightly saline, but purifiers in the tanks were provided for such a contingency, and we were ready at last to take our departure. As we rose for the last time toward the ceiling of clouds, a sigh escaped Moura. "I shall return here some time again. I have only scratched the surface of their knowledge. I have much to learn from them."

CHAPTER X

Moura and the Tula Blossom

STRANGELY enough, I was glad to be out in space again. One can grow accustomed to the great red disk of the sun always in full view without a setting, and the brilliant stars to relieve the blackness of the long night. Earth seemed far away and my life upon it was like a dream now. Only the stars were familiar. Yet Space never grows monotonous, for there is always something new to be seen. A few hours after leaving Venus, Moura set up a small telescope he had brought away from Venus, an object no more than a foot long, which opened out like a camera. It had intricate lenses of thousands of different shaped fused quartz, making it possible to look at it through our walls without obstructing the view. It did not show us the worlds as we had seen them on Venus, but it was better than anything on Earth, bringing the distant stars so close we could sometimes glimpse the dark planets that swung about them. Thereafter, during the hours we traveled onward to Mars, Uncle Ezra could usually be found with his eyes glued to the telescope sights.

It did not appear as if the old man was yet over the ill-effects of his sickness. He was not half so spry and was given more to sitting quietly in his chair in the pilot room, with hands folded on his lap, content just to gaze at the universe round about. Several hours after leaving Venus I overheard him speaking to Moura when he thought I was in another part of the ship. I did not intend to eavesdrop, but when I heard his opening words I could not pull myself away, standing there with my heart in my mouth, frightened beyond words.

"You told us once," he was saying, "that on your world when a man grows old he enters a lethal chamber where he falls asleep and in his sleep the chemicals of his body are disintegrated and he goes into the long slumber. That is a pleasant way to die. No fears, no terrors . . . just sleep. I would like to go that way!"

Moura answered him. "It will be a long while, Professor Rollins, before you are ready to sleep!"

"I wonder if it will be. I've lived my normal span, my life has been full, and now I have had my life's ambition realized in exploring beyond Earth. Would you do this for me, Moura-weit? Allow me to go to sleep in the air-lock and turn your disintegrating ray upon me. And when my body is no more, open the door and permit my soul to escape into the Void to roam evermore! That seems to me the ultimate answer to everything!"

"When you are ready, Professor Rollins, your wishes shall be fulfilled!"

I was rooted to the ground, but with relief I heard the Abruian turn the conversation to safer channels, so I crept away. But later, when Uncle was gone to his room, I went to Moura.

"I overheard the request that my uncle made you, sir," I told him. "I trust you did not mean what you said when you agreed to do as he wished!"

Moura looked deeply into my eyes before he spoke. "Surely, Elsie Rollins," he said softly, "you are aware of the fact that he has not much longer to live. I have seen other men go as he is going: happy, clear of conscience, looking forward to the last adventure. I will not have to perform the task he asks of me, for he is going to go to sleep naturally very soon. I am happy that I have been in a position to make his last hours happy for him. It is not for all of us to have our dreams fulfilled before we die!"

I left him, feeling downcast. I sought out the worn old professor and suggested that now we return to Earth. He glanced at me in surprise, as if he had forgotten there was such a world. He was startled and he cried: "No, no; I don't want to go back to Earth. I know my days are numbered, but how can you ask me to return home? I have passed out of Earth's sphere, and life is ended for me there. When I die I wish to be out here, in this greatness, facing its wonder and beauty. How could I die cramped between four walls within the confines of the terrestrial world? No, I am free—free to wander where my spirit will take me!"

What could I do? I was powerless, and I knew that Moura would uphold Uncle in his desire to die in Space. But I did not know how short his days were.

WE were now headed toward the red planet, Mars, and it was the second longest journey we had taken as yet, for Venus at that time was approximately 74,700,000 miles from Mars. We were traveling at the rate of five hundred miles per second and should arrive in something like forty-eight hours. We had already traveled eight. We would cross the orbit of Earth, but she was far away from our course, her steel-blue light shining against the darkness of the night. Just ahead lay the planet Eros, whose orbit follows a strange course between Earth and Mars and out beyond the latter, but at the present time she was within thirty million miles of Earth, a bright little light that beckoned to us out of the darkness.

It was several hours later, after we had had our swim, that I came into the anteroom where Moura was sitting

in his chair, deep in thought. I had not known he was there and had come for a book I had left behind. He looked up as I entered the room and fastened his eyes upon me, and although I wanted to back out of the room again he held me there with his eyes and I could not tear my own away.

"Tell me, Elsie Rollins," he said, "why, whenever you are near, do I get the impression of the tula blossom? Its wondrous deep color and even its so delicate scent seem to follow you wherever you go. I know you are not wearing the flower about you, but it is close to you all the same."

I felt a flush creeping into my face. The tula was the blossom that Ubca had held out to me that night on Venus when he had explained how I might train my mind to concentrate on a single object at a time and so master my brain completely. And since I had been carrying the thought of the flower with me through all my other thoughts, time and time again visualizing it as I remembered it, bringing up the thought of its perfume I had breathed, and Moura had found me out. Now anger swept me.

"Why," I demanded vehemently, "must you persist in seeking to know what passes through my mind, Mouraweit? Must I continually be subjected to surveillance?"

A hurt look flitted across his face. "Please . . . I am sorry; I scarcely realized that I do it . . . it is so natural you see; your very thoughts register as though you had spoken. I remember now that once before you have resented my intrusion. I must teach you to close your mind to me. I should have done it before, in fact, but I forget to do it, and besides, it is pleasant to note your reactions to the things about you. A woman's mind is like a lovely flower . . . or perhaps we can say music, the sweet, gentle tune of womanhood."

I thought he was laughing at me, for I knew that often my thoughts were not lovely. They were not now. He answered my thought. "It is not always the surface thoughts I speak of, but those impressions that paint our personality, the real person under the other thoughts that we lay over them . . . something like that flower you think so much of."

I tossed my head but did not speak. What need to talk when he knew the unuttered thought?

"The reason I asked about the flower," went on Moura, "is because its presence in your mind struck me forcibly. On my world we call the tula the flower of love, with its heart so white and pure, its rich violet-black color the color of passion in its intensity. Do you wonder that I questioned why you carry its image with you? But then I've had your answer already from your brain and know your reason. I am sorry I misunderstood."

As he spoke hot tears had sprung into my eyes, and without answering I tore myself from his grip and fled frantically from the room. Oh, how hurt and angry I was, but this time it was Ubca who bore the brunt of my temper. I thought that he had, in a moment of mischief, thrust me into this predicament, knowing what the flower portended and knowing what its presence in my mind would confess to another. I should have realized that it was an accident that led him to pick up the flower to illustrate his words, forgetting I did not know its meaning, not thinking I would take him literally and fasten my thoughts on that single blossom. Only I was too frenzied to reason that such might be the case. All I wanted then was to be back on Earth, away from these horrible Abruians.

Hours passed, in which I flatly refused to leave my room. Urto came with food and tried to draw me out. He, too, I knew could read my thoughts, and never before had I been so humiliated. How I needed the comfort of a woman's arms at that moment. What I might have done during those long, dark hours that followed I do not know, but the spectre of death had boarded the *Yodverl* unrecognized by any of us, and when Ubca came to tell me that Uncle Ezra was dying I could think of nothing else but him.

While I had sat there alone, hating the power of the Abruian mind, he had gone to sleep, never to be aroused any more. For several hours the breath of life still remained in the old scientist, and the four of us sat beside him hoping he would awake again. He died as he had wanted to—sleeping.

Somehow I could not cry, for I knew he was happy at last, completely so, more than I alone could ever have made him. He had gone gladly, willingly, and he would be hurt to know that I mourned for him, wanted to give him back to life. But in my heart was a deep pain of longing for the man who had been both mother and father to me, and who later in life had in turn drawn from me the mother instinct to care for him above all else. I sat by him for hours, recalling the years we had passed together, until at last Moura came and gently led me away. But before I left him I said a prayer for the newly freed soul wandering toward eternity.

I did not know when they carried the body to the air-lock, and with the powerful radium ray of Abrui which incorporated all the dread power of the element carried out the professor's last wish, opening the door so that he became one with the Void. So he passed from sight of man.

CHAPTER XI

Installing the Meteorite Deflectors

WE were now in full view of Mars. It practically filled our whole "sky," and we could easily make out the contour of the ground "beneath," great reddish plains over which a sand-storm was sweeping, erasing everything else from sight. However, we no longer moved any closer to the planet, for no one felt the urge to land there when the man who had wanted so much to explore the planet was gone. For a whole day we hung there in space in honor of the professor. Far off we could see the light that marked Earth, and now was a lamp lighted there for me. The world seemed reaching out for me, calling me home. So I went to Moura, who knew why I had come to him.

He looked strangely down upon me when I stated that I wanted to go home. If you wish it, Elsie Rollins, but I had hoped you were going to go onward with us, out of the confines of the solar system, on to the world that lies ready waiting our coming! Do you hate us so much that you wish to return to that small globe of yours yonder?"

"Yes, I wish to return. I am lonesome for home. You know I came here only because my uncle wished it, and now that he has left me I shall go back to my own people. I shall never forget what you have given

me, but I know I could not be content to go farther."

"And you will be happy on your own world? Why?"

"Because I will be with my people in a world that is familiar to me. . . . Because it is where I was born, and it is all that I have ever known."

"Yet I repeat, will you be happy? Can you be contented within the limitations of land, water, sky? Will you not long for the immenseness of all this, the adventure of it, the wonder of it? And won't you miss those who have gone with you into this adventure, Elsie Rollins?" How vibrant was his voice, how strong his personality!

"I shall remember you," I answered.

"Is that all?" softly.

I shrugged my shoulders. "What else could there be?" Why did he insist upon questioning me, I wondered, he who knew my mind as well . . . or perhaps better than I.

"Then," said he, "you shall return to Earth!" and with that he left me.

We did not start back immediately, for Moura had just completed a new apparatus, the one whereby he hoped to deflect meteors and aerolites from the *Yodverl's* path. It took a day for Ubca and him to place it. It meant that they had to don the air-pressure suits and to climb out of the ship to set the four metallic deflectors at both the prow and the stern of the ship. These plates were circular, two concave, and two convex with an invisible wiring running down the length of the ship on either side to connect the four together. But then you are familiar with those fixtures with their small hermetically sealed radium motors no larger than an ordinary watch. Perforce the wiring of these discs ran into the ship by the way of the airlock and were connected again with the machine set below the living quarters but were controlled by dials in the pilot room.

It was the first time I had seen work performed on the outside of the flyer, and standing in the pilot room I watched the pair with heart in my mouth as they, like two lumbering beasts in their queer outfits, made their way over the shell. Because of the ship's own center of gravity, the men had no difficulty in keeping their feet, although if we had had no magnetic force of our own they would have had no trouble that way, since being away from gravity they could not "fall." Had the ship been in motion they would have stayed alongside because of the self-same law.

The reason it took them so long to install the new paraphernalia was because of the awkwardness of their dress. Nor could they stay outside longer than an hour and a half or so at a time, for the bitter cold of the Void ate quickly through the insulation of the suits, so that they had to make repeated trips indoors. Later Moura was going to install heating units in the suits, so that henceforth the "space-stroller" could stay out as long as he desired to do so. As it was their adventures outside the *Yodverl* were definitely limited.

At last the two finished their grueling work and the *Yodverl* carried the plates pressed closely against the body. When they came in for the last time Moura asked if I would not enjoy the experience of climbing outside, so I in turn dressed in one of the tremendously heavy suits. The ship's inner door was closed and the air was pumped out of the lock. I felt a sickening nausea creep over me. That quickly passed and I found the weighted suit was without weight, for the magnetized motors did not affect this chamber. I was unaccustomed to breathing the heavy air in the suit, but Moura showed me how to regulate its flow and to open the valve for the escape of carbon dioxide. Then he opened the outer door.

WHAT a sensation it was to look out into Space with nothing but the insulated suit between me and that awful emptiness. Moura fastened a long cable to my belt, although he did not bother to take that precaution himself. Then he motioned for me to jump (we could not communicate orally) and showed me how to keep the cable in my gloved hands, paying out as I desired it.

Closing my eyes, I did as I was told and jumped. When I opened my eyes you can picture my fright when, looking back, I saw the *Yodverl* a good thousand feet behind! I had jumped to the very length of my cable! Realizing what distance separated me from the ship, I became panicky. I did not know what to do I forgot all that Moura had told me of the cable. I could scarcely see in the darkness, and only because the *Yodverl* was illuminated from within could I have made it out. I felt as if the darkness were something tangible, something with substance that could be cut with a knife.

Frantically I tried to peer through it, to make out Moura's welcome form, but as far as I could see the void was empty around me. Then I heard Moura's laugh, or rather his thought vibration, against my brain.

"You took me too literally, Elsie Rollins. When I told you to jump you jumped too hard. And you neglected to switch on your light, so that I cannot see you." I reached up and switched on the light torch that was fastened just above the eyes like a miner's torch. "There, that's better," continued Moura. "If the cord were longer there is no saying where you might be now, eh? Just give a pull on it as hard as you can. That should bring you all the way back!"

How stupid of me not to have thought of that simple thing, and how chagrined I was at the thought that Moura was laughing at me. My anger gave me double strength, and one backward pull on the cable sent me flying back to the *Yodverl* so quickly that I lost my breath.

Then I saw that Moura had never left the door of the ship, and he motioned for me to place my hand against the glass wall at my side. As I did so I received a slight shock that ran through me as of electricity, and I found my hand stayed where I put it. It was easy then to pull the rest of my body to the surface and gain my feet. Looking at Moura, I saw him reach around from the airlock. Without having to jump, he climbed up beside me.

"I wanted you to jump for the experience it gave you," he advised me mentally, "only I did not wish you to become frightened. But you've enjoyed it, and so you forgive me?"

He had the answer in my brain, and I saw why the suits were not provided with speaking apparatus—it wasn't necessary to the Abruians. Looking down at my feet I felt that I was upright, but a glance told me I was actually standing in a horizontal position on the *Yodverl's* side. It was as easy for me to walk around it as for a fly to walk on a vertical wall This was because we were outside the field created by the gravitational motors inside. It was a novel experience. We walked

all over the ship, but could not see within because of the peculiarity of the construction of the glass that permitted one to look out from within, but made it appear opaquely white from without. And because of this oddity we were never really sure whether we were standing "up or down"; direction seemed all alike. Moura went to the front of the ship to look again at his deflectors, and he seemed to walk "upward" away from me. Then we returned to the airlock and climbed in. The outer door was closed, the air pumped in around us, and we removed our suits.

Moura went directly to the pilot room and the *Yodverl* turned toward Earth once again.

CHAPTER XII

Moura Speaks

IT would be three days before we arrived on Earth, but I began packing immediately, like a child unable to wait until we had arrived. Then I went into the room Uncle Ezra had occupied. His clothing was gone, but there were all his personal effects—his watch, a charm made from a meteorite that he had worn all his life, a lion's tooth, his Masonic emblem, a pocket compass, a gold knife, his fountain pen, and all the odds and ends a man carries with him. There were also his notebooks and his specimens taken from Mercury and Venus. Crying over each object, I carefully wrapped them up and put them away. Each night before I fell asleep I gave a little prayer for the old man and knew that he was content. Perhaps the Great Scientist was explaining to him all His secrets.

Many of the long hours I spent in the pilot room with my eyes glued upon our globe, and my nostalgia grew hourly as we neared it. At last we were abreast the moon, that seemed winking at me and we came nearer and nearer and hovered over the dark side of the Earth, whose feeble luminosity diminished as we came closer. A velvet pall seemed hanging over Earth except along its rim, where the atmosphere was reflecting a corona of light from the sun.

For the first time since our trip on the outside of the *Yodverl,* Moura approached me now. He seemed to have been avoiding me all the while, leaving Ubca-tor at the controls whenever I happened to enter the pilot room—hardly noticing my presence during meal times, and in our daily swims in the pool.

Ubca was guiding the ship Earthward, and with my home so near, I turned from the pilot room for a last excursion around the wonder ship, considering whether or not I should go back to the stable of the mitu to bid the pretty little creatures goodbye. They had always been friendly with me, and I had learned the simple throaty words of their language. It was in the atol that I met Moura, who seemed expecting me. What surprised me most was the intensity of his eyes at the moment. So dark had they grown, they looked violet.

"Do you really wish to go down there, Elsie," he said, omitting the use of my surname for the first time since I had known him.

"Yes, I do."

"And are you sure that you will always want to stay there? Are you not going to recall these pleasant hours aboard the *Yodverl* and long to be out where nothing but the stars limit your horizon?"

"Some of the hours have not been happy ones for me, Moura-weit, and the distant stars can only recall home to me."

"Do you not think this is a phase you are passing through, that when you are satisfied with finding things as you left them, you will wish to be out here again?"

"Why do you think I shall not be contented on the planet of my birth? It is home and there are people of my own kind there. Do you think I do not know my own mind?"

"I ask only because I must be sure for you . . . and, Elsie, I am not sure. Several days before the professor passed away, he asked me to watch over you for him. He knew his going left you entirely alone in the universe. He left you his worldly goods but that is all. He was fearful for your future, as I am fearful, and he trusted me to look after you. I must fullfill his trust, but there is more to it than that. . . .

"You say you will be happy with your kind, but will you? Are they your kind anymore? Haven't you progressed farther than they? Are you not out of their reach? You have climbed to heights they can never attain. . . . Then, again . . . you tell me you know your own mind. Do you?

"During these few weeks aboard this flyer you have been putting thoughts in your mind that do not belong there; you have not listened accurately to the messages from your heart. You have resented the fact that I am aware of this, but you do not know that I am aware of the truths that you yourself have not allowed your mind to realize. . . . Wait, I want you to allow me to finish. . . ." The last was because I had started to protest.

"You have played with certain beliefs that are alien to you, that actually do not exist . . . your belief that you hate me . . . that you hate us all! . . . You've played with that childish thought until you believed it yourself, interpreting your reactions to mean one thing when they mean another. Don't you understand, Elsie Rollins, that in resenting us, resenting me . . . you have lied to yourself . . . that in truth . . . your feeling for me is of different timbre than that of hate . . . instead of hating me you have loved me since that night I came to your bungalow in Africa?

"Once, I too, thought I understood my heart, thought I could never love a living creature, nor did any woman of Abrui ever stir my heart. Then there was a woman I wanted only to further my own selfish ambitions, but I lost her, and thereafter deluded myself into believing that it was love after all. You have done the same thing with me . . . pretended you hated me because of my ugly past, trumped up charges against me, and all the while down in your heart you were loving me! Come now, can't you realize as I have that there is no other fate for us, that we love each other and belong to each other? I have been hoping you would learn the truth for yourself, but I can't allow you to return to Earth without knowing how I feel toward you. . . and you toward me!

"You have disliked the idea that I know all that was passing through your brain, but believe me I did it as lovingly as another man follows the form of his loved one with his eyes, reading from her face her emotions so that he can know her wish and fulfill it, and that has been my only motive in allying my brain to yours. I was more than pleased when first I detected the symbol of the tula blossom in your mind for I thought you had

purposely meant it for me—women of Abrui do that—and I thought you had learned it from Ubca-tor. When I spoke of it to you I learned the truth and I was downcast. . . ." He paused, and then seemed unable to speak further. He hesitated as if to take a step toward me, but instead he turned, and stood looking with unseeing eyes into the pool.

As for me, as he had spoken, one emotion after another swept through my being, all thought seemed to have deserted me, so that I was a vessel drained of its contents. So this was the way of it. Was he right? Did I love this man instead of despise him? I was in a whirl; I did not know what was happening to me. And I was ashamed, so ashamed of my petty thoughts. Perhaps if instead of using words Moura had swept me into his arms, prevented me from trying to think, and had forced me to his will I would have submitted, carried away by the very power of his personality and his love. Only there Moura was wise. He knew that to do that would have later left me open to think again and to wonder if it had merely been the magnetism of his personality that had forced me to him; then I would have commenced truly to hate him.

Turning back from his scrutiny of the pool he said. "I appreciate the effect all these revelations have upon you and I understand your reactions. I am taking you to Earth now, but in a year's time I shall return. In that space of time you should know whether I am right or wrong, and if then you are ready to accompany me across the Void I will be glad; otherwise we shall say farewell for all time. You are willing?"

I nodded, unable to bring forth my voice. I was grasping something of this man's greatness, and his goodness. Already my brain was casting off its doubts, I felt humble before him. The thought that I had gained the love of such a man as Moura-weit overpowered me. I wanted to call out to him, to tell him what I knew now, but he had left me there alone in the room.

We were dropping swiftly Earthward so that it appeared that its dark shape was reaching out for us, hungrily seeking *me*. I knew at last that I did not want to return to it, that I wanted to go out with Moura, out beyond the furthest reaches of the Universe. Finding Moura was no longer with me I rushed to the pilot room to find him again at the controls of the ship with the rough tumbling waters of the Atlantic rushing to meet us.

CHAPTER XIII

Prisoner of Earth

"I AM landing you on the American shore where your people are at play; where you will find those who will gladly become your friends, Elsie. I have some of your money here, and I understand you know how to obtain more for your needs. I shall give you some gems that should make you the envy of your country women," Moura told me.

"Moura," I began, "I . . ."

"No," he cried, "you must not speak, you must go now. A year from today, which is your December 18th, we shall return to Earth for you. If you do not appear within a week's time at the rendezvous you will name, that will be your answer. I shall never be too far away, but where I can always turn my eyes upon your world and know you are safe. Now . . . we must switch off our lights so your people are not startled by our apparition.

"See, below is a road . . . ah it leads to that bright city, Palm Beach, is it not? And there is a convenient clearing. We descend!"

As he spoke, he brought the *Yodverl* down upon the grass lawn of someone's well-cared for estate. When the doorway was opened, we could hear the fronds of a palm tree playing a tattoo in the wind and frogs drummed in a nearby pond. A mocking bird was lifting its voice in a melodious song. Strange, is it not, how a numbed brain receives everlasting impressions!

Urto had brought my jacket and a hat I put on without recalling doing so. My mind was in turmoil, I scarcely knew what I was about. Moura led me to the door, carrying one of my three suitcases, and Urto brought the others. Ubca stood at the door and he took my cold hand without a word, pressing it warmly.

Not more than a hundred yards away ran the oil-marked surface of the road-bed of the main highway leading into Palm Beach from the northward. It was about eleven o'clock with the velvet darkness of the tropical night wrapped closely about us. On the way to the road Moura asked me. "Where are we to meet again, Elsie Rollins?"

My answer came quickly. "In Africa, at the bungalow!"

"Good! I shall be there." Then he added, "there should be cars passing at this hour."

He seemed to have an intimate knowledge of everything pertaining to Earth. "Or, at least, one of those public conveyances. Ah, there come some lights, but wait its driver appears to be the type who does not stop for 'pick-ups' after dark. We will wait."

Two more cars passed as we waited in the shadow of some trees. Moura had a reason for hailing neither. The first he knew was filled before it came abreast, and the second was piloted by a man, whom he thought it not good to stop, since he would deal roughly with a woman he took off a night road. The third machine, luckily, was a bus, a local one plying between the little community of Jupiter and West Palm Beach. Urto was motioned out of the way as soon as the bus came into sight and using a flashlight Moura hailed it. He pressed some silver into my hand with a "this is from your uncle's pocket." Before the car drew alongside he had whispered, "for twelve months, Elsie," and bending over me, his lips pressed mine. Then the car drew alongside with a grinding of its brakes and he was gone. The busman helped me with my bags.

Automatically I climbed in while my luggage was stowed away. The fellow eyed my suspiciously, for it was strange for a passenger here at this spot with heavy pieces of baggage, but he had evidently seen the tall form of Moura leaving and he forbore to question me. There were no other passengers, and in a kindly spirit he drove me directly to a hotel in the city facing the lake and Palm Beach. I thrust the handful of silver Moura had given me into his hand after he had helped me out and a bellboy took charge of my bags. How I registered and got to my room I do not know. I must have fallen directly to sleep, for I awakened with the morning sunlight streaming down upon my face as I lay, still clothed, across the bed. Later, I learned Moura had seen to it that I fell asleep immediately, using his hypnotic powers

upon me, so I could face the new morning feeling freshly reborn.

A maid came knocking at the door and I drew some dresses from a grip to be pressed, I had some bills in my purse and my check book and enough identification to have the checks cashed. Several years earlier Uncle Ezra had had his small fortune transferred to my name, so that I would have no trouble that way at all. When I unpacked later I found that, as Moura had said there would be, there was a case filled with fine jewels set in exquisite designs of unearthly setting. There were also uncut jewels. To my unpracticed eye they appeared to be diamonds, emeralds, rubies, sapphires and opal and their construction was much the same only they were all degrees harder than Earth gems. I never wore any of them but a single string of emeralds cut in triangles, and there was an unset square diamond that I had made into a ring and wore on my engagement ring finger. It gave me great comfort in that year and I knew now that I loved Moura far more deeply than I had thought I had hated him.

I spent only a week in Palm Beach, and throughout the entire year traveled madly about, unable to rest anywhere, unable to make friends, unable to think of anything else but the *Yodverl* and its captain. A month before the allotted time I went to the little home on the African veldt, there to await Moura who arrived on the night he said he would. . . .

SO Elsie Rollins-weiti dropped the thread of her story and gave a weary smile to the little group who had been listening avidly to her words. Of the five who had been grouped about her in the garden only four remained, for at the beginning of the tale Ubca-tor had slipped away.

"Gad, I feel as if I had been there in person," observed Kington, first one to speak. "What an experience!"

"It was a beautiful story, Elsie," said Dana Gleason.

Dick Dorr only puffed on his newly filled pipe while Ezra-weit pressed his mother's hand tenderly.

Kington looked at his watch. "Lord, it's five o'clock . . . er Earthtime, of course, but pretty late at that. How thoughtless of us to allow you to have gone on talking all this time . . . still you have only told us the beginning."

"It is frightfully late," exclaimed Dana, "and now we will retire. But you are going to tell us the rest of the story, Elsie, don't forget that. I think we should have a historian present at that telling for it must be recorded properly for the future!"

"By all means," said Dorr. "It will be many years before we dare venture out of the solar system, and when that happens, it will be well for the first voyagers to have precedent before them. By the way, Elsie, how far is it exactly to Kal of Alpha Centauri?"

"Approximately as far as can be judged 25,600,000,000,000 miles from Sol."

"And how long did the trip take?"

"A fraction over eight years in going, but a little less than eight years in returning."

Kington nodded his head. "Then you must have traveled about half the speed of light since a light year is 5,880,000,000,000 miles, and it takes light to reach Alpha Centauri four years from Sol."

Elsie Rollins-weiti agreed that such was the case. "The *Yodverl* can accelerate faster than it did, but Moura feared to strain its motors and felt that he was traveling on a safe margin as it was."

"Imagine such a thing," commented Kington.

"Well, I think I am going to dream of what you found on the planet, Kal. What type of men did you find there?"

"They were not men as we know them, Dana!"

"Really, well don't tell us any more, until we hear it all in sequence. Now I am surely going to have bad dreams. How about a bite to eat now, and then to to bed, everybody!"

With a stretching of limbs and bodies the party rose to their feet and walked toward the single storied house beyond that was the residence of the Ur-Kirada and his wife of Abrui on the island of Ora.

It took longer for Elsie Rollins-weiti to tell of her adventures on the planet Kal of Alpha Centauri; in fact it was several days in the telling, and at each telling the group around the woman grew as others came to listen with unfeigned interest to her story.

Part III — Kal of Alpha Centauri

CHAPTER I

A Marriage in Space

FOR the month that Elsie awaited Moura's coming the time hung heavily on her hands, and impatiently she tore each day's sheet as it passed from the calendar, crying out at the slow passage of time. She had taken into her employ three of the Kaffirs that had been in her uncle's service, two boys and a young girl. They were happy to see her again, the only friends she had on Earth, but when the day came at last when Moura was to arrive, she dismissed them, bidding them good-bye. However, the girl whom she called Nancy, unable to pronounce her unpronounceable African name, refused to go. She was more intelligent than her fellows, and she seemed to guess that Elsie was waiting for her lover. She had seen the *Yodverl* when it had come less than a year ago, and though she had not understood whence it came, she knew it was a vast ship of the air, and guessed that now it was to carry Elsie away for all time, and she insisted upon accompanying her.

"Missy need Nancee," she said, "Nancee go with Missy. Missy be glad you take Nancee 'long sometime'?"

Thinking it over, Elsie decided that she would be glad for a woman's presence at times, even for the presence of this ignorant savage child, but first she felt it her duty to explain to the girl where she was going. She doubted if Nancy understood after all, or that she ever fully grasped the fact that she was to leave Earth behind for all time. She had heard from her mistress and other bwanas, stories of the countries across the great ocean she had never seen, so more than likely she believed that the subsequent travels in the *Yodverl* were in that di-

---

Author's note: As biographer of this history, I take the liberty of presenting the following story as told by Elsie Rollins-weiti in the third person so as to omit the necessity of the many interruptions in its telling, and to keep its chronological order which was often upset as she recalled happenings and events out of order.

rection. The great star worlds she saw were but natural phenomena to her untutored mind, and she was perhaps more at home at all times than any of the others. So it happened that when the great cylinder descended not more than a hundred feet from the bungalow, she stood ready by Elsie's side for the embarkment.

In the past few months Elsie had attended to all her uncle's affairs and her own. She gave orders for the disposal of this property and the home her uncle owned in America, and wrote her will, which provided that if within five years she had not returned, the whole fortune was to be paid over to several charitable organizations which she knew would do most in relieving some of the poverty so rampant on the globe. So it was that when Moura came she went to him with little worldly goods other than her trousseau and the food supplies she had gathered together to reprovision the ship of space. She had made many purchases for the future and chosen wisely so that there would be plenty of clothing for Nancy and herself, and the materials to make more when those were worn out, together with such accessories as she thought she would need for her entire life time. She had also purchased great quantities of food-stuff, raw and preserved, delicacies and necessities, and the rain tank was filled to overflowing so that the *Yodverl* could replenish its reservoirs.

It is difficult to describe her emotions when she saw the long, slender, shadowy form of the space-flyer fill the sky before it dropped to a smooth landing. A single, well-shaded light glowed in the pilot room, but the white glass walls hid it so well that its light could only be seen dimly. And with beating heart she waited for the doorway to slide outward. Then Moura-weit appeared before her anxious eyes. He came forward swiftly and she ran to meet him. Theirs was a quiet meeting. Neither had a word to say; their hearts were too full. He led her indoors to the home that was to be theirs for the remainder of their lives together.

Nancy followed slowly, fearfully, but she came, even though the sight of the silver and golden men frightened her. Ubca-tor and Urto busied themselves in bringing in the pile of luggage and the supplies, and the water tanks were filled. During the past six months Moura had been preparing the ship for its long voyage across space, apparatus had been provided for the manufacture of water when their supply should run low, and every available bit of space was used for the storing of the supplies; the heating system and the radium light-storing apparatus had been improved and enlarged, for he was determined to go on to Alpha Centauri, spurred by the thought of the other creature, a replica of his former self, whom he had seen through the telescopes of Venus. There was scarcely room for all of Elsie's supplies in the storerooms, so that they had to be placed in the living quarters, in passageways and unused sleeping rooms.

MOURA first led Elsie into the ante-room, through the atol and into the cof, and threw aside the curtain of the room that he had arranged for his bride. She exclaimed at the change, for what had been two small bare cells was now one large room, the partition that had separated them having been pulled down. Love had furnished the chamber. The plain walls had been colored a delicate ivory and on it were painted clusters of the tula blossom so naturally that they seemed to be growing there. A closer inspection showed that all about the room small plants had been placed in boxes and arranged so artfully that their petals blended into the walls. It was difficult to tell where the real flowers ended and the painted ones began. Against one wall was a lovely dressing table with mirrors of polished silver that glowed and shone like a thing alive. The table itself seemed a living thing and on close inspection Elsie realized that instead of being metal it was carved out of a living jewel, deep in color that glowed and sparkled with an inner fire. Moura explained that it had come from Ganymede, one of the moons of Jupiter. There they used precious gems as other men used wood or metal, and their world was practically composed of nothing but jewels of monster size. Each of the receptacles on the table for powder and perfumes was also of jewels.

On the opposite side of the chamber was a wide couch of strange design, also carved from a single jewel, a diamond, canary yellow, without a single flaw. But there the wonders of the room did not cease. The bedcovers were of a cloth of the finest texture, so delicate and light that their weight was negligible although they were woven so closely they proved to be unusually warm. The bedspread was a thing of beauty, a delicate lace that looked like a cobweb of violet, and the cushions that were piled at the head and the foot of the couch were made of a light feathery cloth of a type Elsie had never seen before. Moura told her that the bed-fittings with the mattress of snowy down had all come from Hyperion of Saturn, and were woven from neither plant fiber nor wool, but of rock that resembles the Earthly asbestos, yet is of lighter and more workable te-ture. The rug on the floor was of the same material, only of more threads so that it was tough and durable. There were also two beautifully shaped chairs of ivory along with innumerable cushions. A low table was set between the chairs and it was ebon in color, a black glowing jewel.

Many of the months that he had waited to come to claim Elsie Rollins, Moura had spent in visiting such worlds of the system as he had found friendly and collected one by one all the pieces to furnish this bower, and had himself painted and decorated the room to hold them. Violet curtains were draped across the ceiling of white glass and could be drawn back at will. All was a beautiful tribute to the woman he loved, and more than once Elsie was to scan her own plain face in her silver mirrors to discover what it was in her that had given Moura his inspiration for his painstaking care in collecting the lovely articles for her room, but that man could look deeper than other men and knew what a lovely soul her deep clear eyes mirrored.

In the other rooms of the ship Elsie found here and there a change that was to add to her own comfort. Her heart was so full it was hard for her to find the words to voice her appreciation, but she knew that Moura found all her answers for himself without her aid. No more did she resent the fact that he knew her every thought and reaction, and because of this fact the two lovers were to find that a deeper understanding lay between them than usually exists between a pair. They were never to have the little petty misunderstandings that are the common lot of ordinary couples, for, with his own mastery of his mind and hers, Moura was to teach Elsie how to delve into his and know what was there.

Now that the inspection of the rooms was over Moura spoke to her. "Elsie I know well your customs of marriage. Do you wish me to seek out one of your ministers of the gospel to perform the ceremony for us?"

"What," she asked with heart full, "is the Taboran way of marriage?"

"On Abrui, the two contracting parties register their names together in a record held for that purpose, then their hands are joined together by a state official who has the right to do so."

She did not hesitate. "Then come, let us register our names together and give ourselves into the keeping of Him who controls this immensity. Is that not more fitting?"

Moura-weit's eyes glowed and he nodded his head. Elsie had already proven that he had judged her well.

"But wait," Elsie objected, " I want the stars of the Void to be our witnesses, out where everything else appears puny, out where Uncle Ezra can know!"

Again Moura nodded, and side by side they strolled to the pilot room. Ubca-tor was waiting for them. Everything was in readiness for the departure. The ponderous door was closed, the ship ready for its last take-off. At a word from Moura he set the controls, and gently they rose from the ground, accelerating faster and faster, taking advantage of earth's rotation as they shot off from her at a tangent until the world lay a blot below.

NANCY, who had all this time hung closely behind Elsie, now cowered on the floor whimpering and her mistress bent over her to soothe away her fears. It worried her that she had brought the girl, but she was to become a great comfort to her in later years. As soon as they were out in Space and the *Yodverl* rode the vacuum, she regained her good spirits, fell easily into the routine of the ship and became a great help to Urto after she had learned his ways. She was always to stand in awe of the man who was the color of the precious metal for which men of Earth fought so terrifically in her country and, of course, to him her childish mind was always a source of great delight. The muti were also a great wonder to her, and she was quick to learn their simple language. Secretly she venerated them as god-things, and in turn they appreciated her worship, and would follow her about like dogs whenever they were allowed to. She would roll her eyes wildly as she drank their milk, mumbling some of her outlandish mouthings over it.

On leaving Earth, the motion of that tremendous feat was scarcely noticeable, for during the past six months, Moura had incorporated gravity nullifiers with his magnetic-electric gravitational motors so that Elsie did not feel the effects of space-sickness, as she had the first time she embarked on the *Yodverl*. Then they were in the Void again with the great sun brightly shining upon them, and the greater stars of space creeping closer and closer as though to see more clearly the pygmies that had dared invade their domain. They continued onward from Earth for several hours and Moura motioned to Ubca who locked the controls, and went into the adjoining room. He came back with a single sheet of Abruian "paper," metal, that had been rolled to onion-skin thinness. He also brought a paint bottle and brush, substitutes for the Abruian pen and ink.

Moura took the implements and at the top of the sheet he wrote first in English, then in Abruian: "Aboard the *Yodverl,* the ship of the Void, in presence of the stars of Space we, the undersigned, on this day take each unto the other forevermore, June 18th, 1930, A. D."

The only difference in the Abruian transcription was the date which read, Tradr Mut, 9, 11173, meaning that it was the third duit or month of Tradr, the satellite sun of Abrui, in the year 11173. The Abruians date their history directly from the first awakening of civilized mankind.

Moura next held the brush out to Elsie who awkwardly inscribed her full name under which Moura signed his own. Ubca, Urto and Nancy were called upon to sign as witnesses. Elsie wrote Nancy's name and held her hand as she made her "mark."

Moura thence turned to Elsie. "I take you, Elsie Rollins, for my wife in the sight of the Universe," and she in turn repeated the same words substituting his name in place of her own and "husband" instead of "wife."

So was performed the first marriage of the Void.

CHAPTER II

Festival

URTO now invited the party into the atol where he had already arranged a wedding supper. Ubca-tor fixed the ship's controls upon Mars as they were heading out to Alpha Centauri in its direction, and he was free to join the others at the table.

The table's ware were all of Earthly origin, even to candles in lovely holders, and the food that was served by the golden man and Nancy, who was already pressed into service, had been cooked and garnished as any French chef might dream of doing. There began the rivalry of Nancy and Urto as they both sought to serve Elsie and Moura. All the dishes were from the supplies Elsie had brought aboard, antelope, chicken, vegetables, salad, pastry, cheese and crackers, with the exception of some fruits and nuts from Ganymede. The Abruians do not ordinarily eat meat, but the three did that night, and they relished the antelope above all.

When they had eaten and Urto and Nancy had been forced to bring their own meal into the atol, Urto suddenly left the room to come back playing a strange instrument that Elsie had never seen. It looked somewhat like an accordion but instead of reeds had strings against which the air of the bellows breathed and gave exquisite tones.

The music he played was as strange as the instrument, and was by far the loveliest Elsie had ever heard. Most of the composition was in minor chords, but in a most delightful way they ran the entire gamut of the various keys. Then the notes commenced to climb the scale, becoming higher and higher until they were almost inaudible to the ear, so fast were their vibrations, and Elsie noticed a strange thing. A sweetish musk-like odor pervaded the room, to become more delicate and sweeter as the musician continued to play, until a perfume that was almost overpowering filled the air. That ceased and now a faint, though beautiful, indescribable shade of color filled the room, a color that seemed to be gathered from several of the colors of the spectrum. It changed and gave way to another admixture of hues, to be followed by a dozen different combinations that suddenly gave place to coral-pink, azure-blue, golden-yellow. Then

they all disappeared and the faint far-away music was gone.

Elsie exclaimed over the marvelous performance. It was the first time she had ever heard music aboard the *Yodverl,* unaware that the golden man could accomplish so much weird beauty. She learned that on Abrui music was kept by its people as an expression of great joy and was only employed for occasions thought to merit it, yet they were a race of musicians. Every youth learns to play the queer musical instrument, the calula, until he is its master. There is no written music, but each player improvises as he carries on, so that, held to no single set of notes, he can work his theme out as the spirit calls him. They had long ago discovered the secret of hypnotizing their audience into believing their nostrils breathed perfumes and their eyes saw color by combining certain notes and chords and all this was as much of their art as the bringing forth of their tones.

As Urto finished his orchestration, Ubca rose from his chair and crossing to the opposite side of the room began to whistle softly. The music he brought forth was of different timbre than Urto's. It was light and delicate and anyone listening was perforce lifted to the very heights by its glorious tones. Ubca's song was one of love and the listener was made to feel the fears of the lover who questions if his love is understood and returned by the one it is bestowed upon. Then came the discovery that the other's love is true and there followed such a marvelous creation that Elsie found tears welling up in her eyes.

With the end of the song Nancy, who had been squatting on her heels beside Elsie, was aroused to movement. The negro race, as one knows, takes most naturally to music, and the wondrous tones of Urto and Ubca had brought response from the simple girl's heart. She began crooning and swaying her body where she squatted and they were treated to one of the weird, mournful, wordless songs of her people, that carried in it all the longing and sorrow of a race that strives to find its expression. She worked herself into a frenzy so that she got to her feet and gave a dance that was as primitive as her soul. Only in her wild enthusiasm she was carried away to such heights that she inadvertently came too close to the pool that lay gleaming in the light from overhead, and losing her footing, she toppled ungracefully into the water. That broke the spell and they all had a great laugh as she was pulled from the water dripping wet, a much bedraggled darky. Her own sense of humour broke through its shell, and she joined in the fun she had created, showing her ivory white teeth in a great guffaw. Urto led her to the room he had fixed for her, and there she changed her simple dress.

CHAPTER III

Starting on the Long Journey

UBCA-TOR, Moura and Elsie returned now to the pilot-room and, with Ubca taking the controls once more, they headed outward into Space. Earth with Venus, Mercury and Sol dropped behind them, and the red eye of Mars gleamed ahead once more in all his wonder. Far beyond they could see Jupiter against the constellation of Gemini on the zodiac. Moura pointed out the little aerolite, Eros, in the black sky.

Elsie was curious to know something more of where they had been during the year she had spent on Earth, and he narrated all of their adventures to her. They had visited a number of the planetoids that lay between Mars and Jupiter and landed on several of the largest. On two they found life, animal and planet, but no human beings, but on the third they discovered that a new species had developed, bear-like creatures of intelligence, with cities and a knowledge of astronomy and mechanics, but who were very warlike and hostile to the strangers, so that they left immediately. Traveling close to Jupiter, they had landed upon several of its moons. Three were found uninhabited, the fourth was peopled by a race strangely man-like, but they too were inhospitable so the travelers did not land there. On Ganymede they discovered a friendly race of fox-faced creatures who were lifting themselves out of savagery. They took the Space-travelers for Gods and laid all manner of gifts before them. They were as rich in precious gems as other worlds were in common metals and were skilled workers with them. To please Moura they fashioned Elsie's bed-couch for him. He found the dressing-table hidden in a cave that appeared to be a treasure-cove and because he admired it, they gave it to him.

On Callisto of Jupiter they discovered a dead world, the ruins of old cities, and there, in a building, they found the perfume bottles that Elsie saw on her dressing table also made from jewels although that world was not quite so rich in them as Ganymede.

On Hyperion, one of the satellites of Saturn, there was a highly developed civilization of creatures evolved from plant-life. They recognized the Abruians for what they were, men from another planet and received them with due honor. Their world was entirely devoid of metallic ores, but they were most ingenious in their use of wood, chemicals and the fibrous rock. It was from them that Moura obtained the laces, the bed-coverings, rugs and pillow-chairs. They had also presented him a goodly amount of uncut material, which later was shown to Elsie, who made clothing of it for herself, and later for her baby. For these things Moura had given them a small supply of raw metal left over from what had been given him by the Venerians, also a metal chair, and some of the radium treated cooking dishes.

Hyperion is only a small world, having a diameter of but five hundred miles, and its people were looking with longing at the nearest moon, Titian, which was three thousand miles in diameter. Moura recognized the fact that in his ship they saw the means of spanning that space, and so it was that immediately the two Abruians took their machine out of reach of the plant-men. On almost all the worlds they had visited they had found it possible for them to go about without their oxygen masks, since the air content was what they were accustomed to. Only on Hyperion there was too great a percentage of oxygen for their safety.

They had been most interested in the rings of Saturn and drew as close to them as they dared. It was a terrific experience and for many hours they stood off to study them. As scientists had determined by observations from earth, the rings are made up of swarms of meteorites, and they were fortunate enough to see the effect the collisions of two or more bodies had upon the rings, as they caused small flares of light to glow for a short time.

By that time the six months were almost up. Moura

had a chronometer to allow him to keep terrestrial time, but he feared it may have gone astray and he had no wish to be late for his appointment, so they had arrived something like eight days ahead of schedule. These days were spent upon earth's moon making many discoveries—one of which was that the satellite had, without a doubt, been inhabited at one time. In the sea of Mare Serenitatis, in its sandy surface, they found fossil remains of fish and sea life! Further, with sensitive instruments, they located deposits of radium below the surface, great deposits, and with it the element eldimun, the substance that causes instantaneous combustion upon uniting with radium; the same element that was believed to have caused Tradr of Abrui to change from a dead moon to a glowing miniature sun and so give life to the planet. Encircling all of the moon, Moura and Ubca had ascertained that the whole of the body was unusually rich in these elements, and now Moura predicted that in the far future the same thing that had happened to Tradr would occur on Luna so that even if Sol were ever to burn himself away, Earth would have its own captive "sun" to give it life and energy throughout the future ages!

CHAPTER IV

Out of the Solar System

ELSIE and Nancy soon fitted themselves into the routine of the *Yodverl*. Elsie and Ubca-tor resumed their old friendship where it had been left off, and now they were mutually drawn together because of their love for Moura-weit. Elsie insisted now that she learn everything there was to know about the *Yodverl* since she was one of them, and she learned a great deal more of Abrui besides. She learned to control the ship almost as efficiently as the men and insisted that Moura allow her to write down notes of all his great discoveries. She became proficient in the Abruian tongue and in turn took Nancy's education in hand, teaching her enough of the Abruian language so that Urto and she were not at so great a loss in understanding each other. The simple negro girl took to everything she was taught readily enough, for she was a good imitator. She insisted upon taking as much of the work of keeping the living quarters in order, and did as much in the kitchen as Urto would allow. And when the clothing of the travelers showed wear, she was ready with her needle to help repair and fashion new ones.

So Elsie Rollins-weiti's new life began and moved along in a smooth, well-oiled groove, that was to persist for the next eight years. More and more she learned of the wonderful mind of her husband, and their love for each other expanded with the years. Theirs was a love of understanding and never once did they find anything to quarrel over. Even when at work in his laboratories, or when after they had arrived on Kal and he was away from her, Moura was always thoughtful enough to send kindly messages to her through the medium of the brain. And he taught her how she might send him messages in like ways. She never did succeed in closing her mind to his, but after her return to the *Yodverl* she had no desire to do so. More than once they had a good laugh over the thought of the tula blossom she had carried for so many days at Ubca-tor's instigation.

Now Mars was passed at a distance of ten million miles and they swung into that area in which lay the vast number of planetoids. One of the men was always on the lookout for them, for, though the orbits of many of them have been plotted by astronomers on earth and Abrui, there were countless numbers of which many were unknown or which had not been observed closely enough to determine their exact position. Of course, the meteorite deflectors aided in avoiding them, but the voyagers did not relish coming too close, and there were sighs of relief when they knew that they had passed completely out of that region. The only fear they had of meteorites was that they might be falling too rapidly for the deflectors to act upon them in time, but Moura had added a bell to his equipment that rang in the pilot room during such an emergency.

Jupiter lay far to the right of them as they passed his orbit, for at that time he was traveling toward his superior conjunction, i.e., to the far distant side of Sol, and therefore was not in their line of march. Saturn, however, was almost due ahead and they passed him with his rings edgewise to them. Uranus was in his apogee on the distant side of the sun, and they saw the light of Neptune far "below" them as it seemed. Abrui was behind the greater planet. The Abruians trained their telescope upon it and watched that little world that was their home until it lay far behind. Elsie had her first glimpse of Abrui there.

On, on they continued, and now they saw a great dark planet that the Abruians knew lay beyond their own small world. It was believed by their astronomers that Abrui was actually once a moon of Neptune, but it had been pulled away from the planet by the force of this greater planet that was several times larger than Neptune, so that that planet lost its hold on Abrui, and Abrui in turn fell into a new orbit to encircle the sun for all time in its present position of 4,557,000,000 miles from Sol.

Moura brought out his instruments and estimated that this giant globe, which was called by his people Tui (the Last One), was practically four billion miles from Sol! Parts of it seemed to glow with the light reflected from Sol, but for the most part it appeared dark, as if its black rough sides were incapable of reflecting the sun's light.

Using his delicate instrument, that felt out the magnetic vibratory impulses of the bodies of the Void, Moura swept it in every direction beyond Tui. Twice he thought he received response, but because their mission was taking them in the opposite direction they had not the time to follow out the quest, but Moura was certain now that at least one, if not two, worlds lay in the great black distances.

The *Yodverl* was now moving at practically one-half the speed of light, with one day after another following each other in rapid succession. It was with a queer admixture of emotions that the voyagers realized that at last they were outside the confines of the solar system, although the delicate instruments registered the fact that the power of Sol was still to be felt. Looking backwards, they saw the sun as a globe no larger than a golf ball, and its light was subsequently dimmed to that proportion. Then came the day when the instruments recording Sol's pull registered zero, with other parts of the instrument already noting the "pull" of those other great suns far across the black sea of Space, Sirius,

Capella, Alpha Centauri, which were reaching out with a much greater span than Sol possessed.

CHAPTER V

In the Void's Maw

HOW wonderful the distant stars were now. The Milky Way shone in all its circular beauty, its clouds, nebulas and star clusters more magnificent and gigantic than could ever have been imagined when one is confined by terrestrial world and atmosphere. Stars of the first magnitude were becoming ever more brilliant, so that they vied with Sol in sending the travelers their light, stars, hundreds and thousands of times brighter than he had been these billions of years. As time went on some of the great stars were to be seen visibly receding into the greater distances beyond Sol, while those which lay ahead were glowing more brilliantly.

The *Yodverl* was headed for the region in which the Centaur lay, not far from the bright, flaming Southern Cross. The Scorpion, with its great red star, lay not far distant. Hydra, the snake, was outlined along its whole length by stars, the Scales shining above Scorpio, and Ara, the Altar upon which Centaur is sacrificing Lupus, the beast, stretches below him. Adequately it is expressed in the words of the poet:

> His right hand, he ever seems to stretch
> Before Altar's circle. The hand grasps
> Another creature, very firmly clutched,
> The wild Beast . . . so the men of old it named.

Above the Centaur flies the Crow, picking at the tail of Hydra, while not far to the right of Centaur moves Argo through the heavenly sea.

On, on they went, exclaiming at each new wonder that swam into their vision. Far away they saw the faint glimmer of the great Andromeda nebula just above Cassiopeia's chair, the nebula that some astronomers believe to be another galaxy of stars identical to the one of which Sol is a part. Moura, who had with the Venerian's mighty telescopes studied the formation, stated that it had appeared as such, but even the Venerian instruments had not been strong enough to give it in detail.

Orion was filling a vast area of their sky, and without the aid of the telescope they could see his great nebula that lay in the stars of his sword, a great glowing splendor of incandescent gases. Stars they saw in the making, young stars, middle-aged stars and the old ones whose light was already waning.

On, on they drove in the blackness, illuminated only by the starlight coming to them through millions, billions and trillions of miles. Gradually Sol grew smaller and smaller until when they lay within a year of the end of their journey he looked like a star of the fourth magnitude.

The years it took to make the journey were not so long as might be imagined. At the beginning of the second year Ezra-weit was born, and so Elsie's days were filled to overflowing. Nancy proved her usefulness in those days, and she adored the baby with the silver underlying his fair skin, with his hair and his eyes that were replicas of his father's. Perhaps sometimes Elsie regretted that her baby was to grow up in the cramped quarters of their traveling home, that he did not have the warm sunlight to bathe his fat little limbs, that he had no grass to play on, that his first sight of grass, of trees, of water, earth and heaven was to be on a strange world, and that she had no familiar sights to point out to his small inquiring mind.

But for all he lacked, Ezra was to grow into a strong, healthy baby, under the rays of the radio-active glass, the whole universe his world. His schoolroom was most often the pilot-room of the ship where he had only to lift his eyes to see the wonder of the worlds about and to absorb something of their greatness into his soul. With her Elsie had brought many books of Earth, and from them she taught him all she knew of her own world, as she taught him from the Abruian books of the world she had herself never visited. She was speaking Abruian almost entirely now, and the boy received his education in that tongue, though she taught him to read English as well.

Moura spent a great deal of his time with his son, and so his mind developed in great strides in every direction. He, like children the universe over, was always asking questions, and all four adults, Ubca and Urto included, found themselves hard pressed to answer him. He was practically seven years old when they came to Kal, and his wonder at what he saw was unbounded, like that of a blind man who has heard descriptions of objects around him all his life and who finds his sight given him at last, to learn in turn that all his impressions had been wanting when he perceived the originals. But by that time the child was more thoroughly informed than the average child of either Earth or Abrui, and already showed signs that he was to grow into an equal of his father. He had learned at a tender age to understand the minds of those about him, to read their thoughts and to project his own. Every evening for his benefit Moura gave him lessons in mental projection, showing him pictures of Earth, Abrui and the other worlds of their own star-system, but it would be years before he could imitate his father to that degree. Some people on Abrui never accomplish the art.

Nancy adored the child and was always at his beck and call, and came the nearest of any of them to spoiling him. Urto had painstakingly taught her the Abruian language, so that in time she forgot English entirely, and even her own outlandish dialect was lost to her. It was with intense grief that Ezra was to see her die within a few hours' journey of Earth, for she had been a second mother to him.

SO had the years slipped smoothly along well-oiled grooves on the *Yodverl*. The lives of Elsie and Moura were closely knit so that they became almost as one, thinking as each other, enjoying the same interests, and adoring their child. In giving birth to Ezra, Elsie had all but died, hovering for many hours between life and death. Moura never entirely recovered from the shock of it. Even in working over some difficult problem in his laboratory, he would think of her, sometimes stopping his work to come to where she was, to touch her hand, or to smile upon her, and more often she was at his side whenever it was possible, seated in his line of vision, so that he could look up from his tasks and their eyes could meet in a long, sweet gaze.

Moura's time never hung on his hands, for during

those years of the voyage he was never still, and he invented many little appliances that were to aid men later in crossing space, or again were to be of use in the home, in the field, in the mill and the mine. For instance, he invented an Abruian clock that automatically took its own observations of sidereal time, so that man would be spared the need of taking down those intricate complications, but would always find the correct time in his own home in whatever part of the planet it might be! He discovered a new ray in radium that had the power to lift heretofore immovable weights, nullifying them so that they could be moved about as easily as one moves a feather through the air on the tip of the finger. Using Elsie's typewriter for a model, he built a machine that could work with the highest forms of mathematics, so with magical simplicity the hardest problems of algebra and calculus were arrived at with no more than the pushing of half a dozen keys.

In finding materials enough to use for his work he more than once had to resort to melting up chairs, tables and cutlery, until the time came when there was nothing left on the ship that could be spared to the laboratory. So it was that the want for more materials led the man to make another great discovery, perhaps we should say his greatest. He began to experiment with the low grade of ether that fills all the crevices of Space!

Science recognizes the fact that once everything was in a gaseous state, and out of that, actuated by a force, be it spiritual or accident, the whirls and eddies that were to become nebulas, stars and worlds came into being, and since there is no other explanation forthcoming, we are perforce given to admit that it all originated from the "nothingness" that is Space, tenuous though it seems to us who are of the denser stuff of terrestrial being.

More than once Moura's delicately sensitive instruments had hinted to him of the truth that the ether of Space was not altogether "dead"; that slight as they were impulses had come to him that had nothing to do with the great stars or their systems, that in truth Space itself was vibrant with a being. And now, with his senses trained to this vitality of Space's being, he sought it out more intentionally, purposely. The air-lock of the ship henceforth became his laboratory, and there, for hours on end, he experimented with this new force he had felt out there. He had many failures before he succeeded, but at last, with the instrument that like a dredge gathers up the matters suspended in water, he found the means of gathering the electrons suspended in the ether of the Void.

Month after month he toiled, and slowly his efforts were rewarded as he separated from the rarity of space the elusive scraps of elements that swam between the great stars. A fisherman would have said it was a poor haul, but to Moura it was the peak of his attainment. But the work had only begun, and several years were consumed before he found the means of transforming these essences salvaged from Space into denser, material things. Being an indefatigable person, Moura did not know what it meant to give up his self-imposed task, even though it meant that he had to study more thoroughly the composition of all matter, to succeed first in breaking down matter to its essential components before he could hope to build up new. Yet, in the end, he surmounted every obstacle and came out with the first piece of low-grade metal he had evolved!

Even Ubca who had worked with him did not know how it was done, but his eyes shone and he was as elated over Sa Dak's victory as much as if it were his own.

From then on it was simpler, and now the *Yodverl* was a ship of bounty again. Moura, like a child with a box of magic, brought object after object out of the nothingness, supplementing everything he had robbed it of previously. And now, with the secret learned, he did not stop at producing inorganic substances but worked until he was able to bring living fruit from the air-lock, fruit that was as tasty and efficient in its food-value as that which grew on Abrui and on Earth! Had he discovered the secret of Life itself?

Near the end of their voyage when the food supply was running low, when they had been forced to turn to the chemical food the Venerians had given them, this discovery was to become a godsend. For more than six months they were to live wholly on Moura's synthetic foods. Luckily, the fodder for the mitu held out, so that they were to have their precious milk up to the last minute, but alone that would have been poor ration.

It was from one of his synthetic plants that Moura discovered the means of producing the anaesthesia that was to become a boon to both Earth and Abrui, for it was the means to suspend all animation in the body so completely that in a major operation all the organs lay as dead, and even the heart could be operated upon without fear of killing the patient. Nor would the blood flow as long as the patient was under its effect, even though the vessel lay vertical. . . . When the patient revived again there was no pain to be felt, and since the salves and medicines of Abrui cause wounds to heal almost immediately, the patient would quickly recover from his illness.

These were a few of the discoveries that Moura-weit made on the way to Kal of Alpha Centauri, and which he bequeathed to all of his world with the hope that all mankind might be benefited by them.

CHAPTER VI

Kal

ONE can easily picture with what mingled emotions the little expedition realized that very soon their long journey was to be over, with Alpha Centauri looming largely before their eyes, standing out alone in all that immensity now as once their own familiar Sol did. For years they had been watching its approach, saw its companion stars of the constellation receding into the distance, so that the constellation of the Centaur was distorted and shapeless; saw the star divide itself in two and become not one star but two!

Now were the great heavens changed to them, for slowly though it had happened, the Void was different, many stars indistinguishable even as Sol was almost indistinguishable, while others were closer, greater, more wondrous. There was Sirius now 21,000,000,000,000 miles nearer to them than before, glorious beyond description, its clear, white light like a lantern set in the sky to light their way.

But it was Alpha Centauri that held all their attention. Alpha Centauri is classed by astronomers in the second type of stars, similar to Sol or of the G-Type, according to astronomical ranking, and because it is a binary it was a doubly wonderful object. The first star

of the pair was a brilliant yellow, its smaller fellow somewhat darker, almost somber, of brownish caste. These two stars revolve around their common center of gravity once in eighty years As it happened, the space-travelers were not to be fortunate in seeing an eclipse as one hid the other from sight, for, instead, they found them to be at the extreme opposite ends of their orbit at this time, and so presented to their eyes the phenomenon of two stars.

They were still a year away from Alpha Centauri when Moura and Ubca commenced the study of the planets of that system. Moura had seen three of the planets from Venus, and knew Kal, the one he sought, to be the second from the sun itself, assuming, of course, that the Venerian telescopes would be unable to pick out any planets closer to the sun. Now, the two found that the twin stars had a family of not less than eleven planets reaching billions of miles out into space. From their vantage point they could see the illumination of four, but as the others were in their apogee at the time they could not make them out clearly. Thus they discovered that Kal was in truth the second planet in line and lay approximately 77,670,000 miles from the orbit of the two stars. But they had no way of determining its orbit, to know how close or distant the planet might approach or recede from its suns in its course around them.

Alpha Centauri's most distant planet was found to lie as far as 8,300,873,000 miles away from the stars!

As they approached nearer they could see that that planet was presenting its first phase to them, a thin faint crescent of light as the suns shone upon it obliquely. Moura had no wish to call on that cold, bleak world, but steered as close to it as possible, slowing the ship down to a snail's pace as they entered the confines of the system. All was darkness about them except for the glow of the two great stars in that sea of darkness, and they knew not how many dark bodies revolved in the space between them. Twice the instruments showed the presence of dark unseen bodies that they had to avoid, bodies that because of rough black sides and the lack of an albedo* did not shine in the blackness. A comet, on its way to the twin stars, passed uncomfortably near, and as they watched it in awe they almost came to grief, as they forgot to study their instruments and almost ran into a black, unlighted world that had swept into their path. It was discovered in time, and avoided, but the incident left the little party somewhat shaken and fearful. Meteorites fell about them occasionally, but were repelled by the deflectors. So one by one the planets superior to Kal were passed, and each of the travelers gathered in the pilot-room sent up his individual prayer of thanks to that which had brought them safely to Alpha Centauri.

The light of the two stars was becoming blinding there in the pilot-room, so dark glasses were brought forth again to protect the eyes from the intense rays. But the warmth of the stars was welcome, since even the great radium heat generators had not been able to ward off entirely all of the cold of the Void they had come through, and perforce they had been wearing felt and fur garments during the day and night of the last two years of the trip.

These were now discarded.

*An albedo is the ratio which the light reflected from an unpolished surface bears to the total light falling upon it.

THE child Ezra now spent most of his time in the pilot-room, exclaiming over the new wonders, asking questions in an endless flow. They were all impatient to reach their destination, tired at last of their small moving world, whose every little nook and cranny was so monotonously familiar. Had there not been the deep-laid foundations of love and fellowship between them they would long since have been completely bored with each other, possibly hating those with whom they were forced to live in the cramped quarters, but even that close comradeship could not keep them from enjoying the prospect of land, of space in which to stretch bodies, of air, fresh and sweet and wind-driven, and even to have the chance of getting out of earshot of each other!

What were they to find on the planet that they had crossed the Void to reach? Would its atmosphere be congenial to them? Would it receive them? Or would they, who had come trillions of miles, be forced to return homeward without touching foot to its soil?

With Ubca's aid, Moura was measuring the size of the globe to which they were bound, and to their chagrin they found it to be almost four times larger than either Earth or Abrui. Were they to find themselves upon a world impossible for them to move about on? Moura said nothing, but his eyes were bright as though he were already figuring a way to overcome that handicap. They continued with their observations The albedo of the planet was seen to extend far out from its surface, so that the two came to the conclusion that its atmospheric blanket was several hundreds of miles in depth, but would it be congenial to them? Could they breathe its air?

At last they were hovering above the world, and with the unaided eye could make out its great land masses against the sheen of its oceans, as though it were in bold relief. They noted that the planet had no moon, but its nights would not be dark, not as long as the twin stars of Alpha Centauri stayed their distance, for to the left of the planet shone the great yellow ball of fire that was Alpha Alpha, and far to the right the second body, Alpha Beta, glowed with less fire, but enough to give a soft saffron light to the opposite side of the world. Thus, because of this unique arrangement (unique to the Solarites), only a very small portion of the globe showed darkness, a narrow strip that ran from pole to pole, where the light from the component parts of the star did not shine, only there was no complete darkness, since there the atmosphere refracted the light until only a twilight filled that section.

The *Yodverl* did not descend immediately but stood off from the world for thirty hours, and in that time the duration of the planet's period of rotation was determined, a period that was twenty-three minutes less than twenty hours, while the twilight lingered in the night portion no longer than three hours and forty minutes. True, the side of the globe lighted by the lesser sun was not so bright as that lighted by the brighter one, but after they were established on the surface the people of the *Yodverl* were to become accustomed to these transitory changes and gauge their days accordingly.

Moura would have preferred to make the descent to the planet under the cover of the night, as was his wont, so as not to startle its inhabitants, but he sought, instead, the land where the twilight covered it and trusted that their coming would not be noted overmuch. Closer and closer they drew, following the line of shadowy dark-

ness as slowly the world rotated on its axis. With Moura at the controls, Ubca hurried to the air-lock, there to test the flow of air that came through the petcock he opened for that purpose. Elsie stayed close to Moura, with their child at her side, watching the new world draw near.

SLOWLY the world grew larger, and with it their vision was narrowed down to the small area to which they were descending. Northward from their line of descent they saw a mighty mountain range which Moura estimated to be higher than anything on Earth or Abrui, while to their left glistened the waters of a great orange ocean. As they sank closer, the mountains obscured the view beyond, and slowly the water receded in the opposite direction. Below was now a piece of what appeared to be wild jungle, and, as they drew even nearer, they could see in the glow of their lights the strange unearthly coloring of the vegetation: reds, yellows, purples, blacks and deep violets in their most garish hues! A small river shone out from between giant, wide-leaved trees and was a reddish yellow in color. Beside the river Moura descried a small clearing, large enough for the bulk of the *Yodverl*, and there they made their first landing upon Kal!

Ubca came running into the pilot-room. In scientific terms he gave his report of the atmospheric content of the planet, and from it Elsie was able to gather that it was identical with that of Abrui, a little denser than that of Earth, but almost the counterpart of the air content in the *Yodverl* itself. Moura grinned joyously.

"I hardly expected such good news as that, Tor. Would you suggest now that we shut off our gravity to learn what this world has to offer us? Of course, we shall have to keep the gravity machines running at all times for us here, but now it would be interesting to learn just what effect the gravity of this big world will have upon us and what we shall have to do, so that we can be comfortable once we leave the ship."

Ubca agreed that the idea was a good one, and Moura moved over to the switch that was to shut off the power of the electro-magnetic machine. Everyone seemed to hold his breath, and all eyes were glued to the dial that recorded the reduction of that power. It reached zero! Nothing happened. No one moved. They waited for the change that was to come, the feeling of so much added weight. But it did not come. Ezra-weit was the first to move; he clapped his hands and laughed up at his elders. It was enough to break the tension. Everyone commenced lifting his feet, only to find that there was some difference. Everyone felt lighter than usual! They felt as though twenty to thirty pounds had been taken from them.

Shaking his head, Moura turned again to his dials and manipulated them, believing that something was wrong with the mechanism, yet everything seemed normal. No one, however, dared express the thought that had come to their minds; it was too unbelievable. Elsie was the first to speak. "Let us go outside; we can tell better out there!"

Moura nodded in assent and led the way to the door in the side of the ship that had not been opened in eight long years. Standing on either side of the doorway, they waited for the first breath of fresh air, and when it came to them, laden with heavy perfumes and the warm, dank breath of the fetid jungle air, their gladness knew no bounds, breathing in deep, lung-filling draughts of air. And even when they had stepped upon the red soil underfoot, feeling unusually light and supple, they could not realize their good fortune, but stood around eyeing each other in the twilight.

Moura was grinning now with the relief and enjoyment at the trick Nature had played upon them, and he sought to explain this new phenomenon to his companions. "It appears," he said, "that the Universe still has some new facts to teach us, my friends. Strange though it seems, we are standing on a world many times larger than our own worlds, and yet we find its surface gravity less than that of our planets. There seems but one explanation . . . and that is that the mass of this world is much less than that of either Earth or Abrui! I should venture to say that we will find none of the heavier metals upon this world; no lead, iron or nickel. It may even mean that this planet has a hollow core!"

Ubca nodded his head in affirmation. "Luck is with us, Sa Dak, as our earthly friends would say."

"Let us trust that it presages good for our expedition. However, I would suggest that we return to the ship again, for we do not wish to wear thin the cloth of our good fortune. We cannot know what dangers may lurk in these shadows about us, and we must be cautious above all else! Come . . ."

Elsie had no wish to return to the stuffiness of the *Yodverl*, for the one taste of the sweet, fresh night air had whetted her appetite for more, but dutifully she took Ezra's hand and returned with the others to their quarters.

Inside again, Moura turned to the company. "A few hours' rest now would be beneficial to all, much as I know you wish to explore further. The world outside will wait for us. Come . . ."

The door was shut, and in a few minutes all was quiet throughout the ship of the Void.

CHAPTER VII

Beasts of Kal

SEVERAL hours later the Solarites, as they now designated themselves, awoke from their nap to find the brilliant light of Alpha Centauri's first sun shining brightly down upon the *Yodverl*. Hardly pausing for food, they all came hurrying to the door to pile pell-mell into the new world they had discovered. As they came outside, Moura advised that none of them try sampling either fruit or water until it had been properly analyzed, and that they should not step far from the *Yodverl*. "I think," he added, "that you are going to be surprised at the forms of life you will see, especially that of the creatures who apparently possess the ruling intelligence. I have spoken of them to you as men, but in truth you will, I fear, think differently of them. You know I only caught a glimpse of them once and was unable to classify what type of life they belonged to simply because I was more interested in the mind than in the body; but I recall their strange, unmanlike shapes of which I have never seen the equal."

"But they are intelligent beings, aren't they?" inquired Ubca.

The other nodded, "Very!"

Elsie paid the two no heed, for her eyes were upon the strange world about her, its vivid coloring, its trees

unlike anything she knew on earth, growths that were unreal in appearance, unreal in their gigantic shapes, for what was particularly arresting in their appearance was their size, flowers that were a foot across, fruits that would have fed all six Solarites, and left more than enough for the next meal. The trees themselves grew to large proportions, rising from a hundred to two hundred feet above their head, the lowliest bush easily six feet in height, the grass-like growths around their feet being knee high. It was as if Nature had been most lavish here, giving out life in mighty proportions, a world not intended for pygmies. It was the same with the colors, the garish, strident, raw yellows, greens, reds, blues, purples, oranges and violets. Nor was there any shading of the tones, but each color bright and clear as the light from the yellow sun was clear and brilliant.

And in looking about, drinking it all in, Elsie had but a single desire. "I want to eat a piece of fresh fruit that has not had its life refrigerated out of it, and to drink fresh water that has not been so filtered that it is absolutely without taste," was her thought.

Young Ezra was also taking in the exotic wonders of their surroundings, clinging all the while to his mother's hand, wondering at the strange fragrance that lay heavy on the sweet, fresh air. His eyes were wide as saucers, but unlike his mother he refrained from touching the flowers that grew in their path as Elsie led him toward the yellow stream that flowed ten yards from where the *Yodverl* lay. Urto was also bound for the stream with a jug to fill with water for testing, and Nancy and Ubca were already busy plucking some of the mammoth berries, an inch across, that grew on a spreading vine near the *Yodverl* door. Samples of grass, leaves and soil were taken alike into the laboratory, and of all the specimens they put to test only two, a berry and a long, pear-shaped fruit, eight inches long, were found to be poisonous. Moura, however, insisted that all the water used from the stream should be filtered before either drinking it, cooking or bathing with it. It was sweet water and very cold, as though it came from the mountains.

Now, the small herd of mitu, the Abruian cow, numbering five, were brought outdoors and picketed several yards beyond the *Yodverl* and out of reach of the poisonous fruits, of which luckily there were only three trees that bore them in the clearing. The mitu went about the business of eating the soft lush grass as unconcerned as though they had not traveled almost twenty-six trillion miles through Space to procure it.

IN the meanwhile the three men made a complete circuit of the clearing to determine whether or not any dangers lurked about, peering as far as they could into the thickness of the forest of great trees without losing sight of the two women and the child behind them. Finding nothing to disturb them, they returned but urged Elsie and Nancy not to venture too far from the *Yodverl* at any time.

"I believe we will make this our headquarters for some little time, for I have an experiment I wish to try out here, and it depends on how long it will take as to what duration our stay here will be," said Moura.

"But . . . what of this man . . . this creature you came to seek, Moura?" Elsie wanted to know, woman-like.

Moura smiled. "He . . . has to do with this experiment, my dear. This is a vast world and we have no way of knowing where he may be, even though we find the cities of his people. There is but one thing for me to do and that is to attempt to seek him out and entice him to find us! I am already acquainted with the structure of his brain, and if he still lives I think I can make him understand our want. If not, then we must have recourse to the task of discovering him."

Elsie had never been unable to understand Moura's need of seeking out this strange creature across the void of Space, but like Ubca she no longer questioned him about anything, following his leadership blindly, content only that her life was intertwined with his. She had no doubt but that Moura would accomplish his purpose, bring this stranger to them, but what was to follow? . . . Well, that lay with heaven.

Now she called his attention to something that had troubled her ever since they had landed on the planet, Kal. "Don't you find this world . . . strangely silent, lifeless?" she queried.

Moura looked up in surprise from his contemplation of a black flower growing on a vine at his feet. "Why, what can you mean? There seems to be an overabundance of life," and he waved his hand to encompass all the growths of the jungle and the clearing.

Elsie nodded. "I do not mean that. Of course, there is life, the trees, the flowers, the moving water, the winds . . . but to me there is something lacking. Can't you notice it . . . the absence of insects? Why, here in all this fecundity it should be swarming with life, under foot and in the air, ants, caterpillars, bees, butterflies . . . all the myriad life that abounds on Earth."

Moura glanced at her in puzzlement. Then he shook his head. "Ah, yes, I recall that you have spoken of such things before, and sometimes your books mention them, but to me I do not find this lack, since on Abrui there is no life of this type! As you know, on Abrui there are perhaps no more than six varieties of animals, and one type of bird life. Insects are wholly unknown there, and possibly it is the same here." He smiled broadly. "And from what I have heard you mention of some of the varieties, the mosquitoes, the flies, the deadly termites and others, I believe we are indeed fortunate."

"Well, it seems strange just the same. See, not even a bird in the sky, and I have been unable to discover any type of life in the creek here; no fish, I am certain . . . not even worms in the mud!"

The man laughed. "You have been unusually observant. I haven't noticed the absence of these things, yet."

"But don't you see, Moura dear, that the lack of these things is unusually strange to me. On our world we believe in the origin of the species, the evolution of one life from another. Wherefore, if there are no such things as fish, birds, insects, what kind of life is there on this world? You tell me that even on your world you believe man originated out of the waters of your sphere, that you have two species of ape-like creatures from which your scientists have been able to trace exactly your origin, since unlike us on Earth you possess the missing links. And you have fish in your waters and a mammal that still lives in the water. Why, then, is this water entirely devoid of life? Can it be that the creatures inhabiting this world, that you saw through the telescopes, all came from the water, leaving none of their kin behind?"

Moura was thoughtful.

"But then, this water may be unique in that no life swims beneath its surface. There are other waters, oceans and lakes that we spied in landing When we get the chance we will investigate them and perhaps find our answer. But come, let us not bother our heads over it for the present, anyaka;* we have declared a holiday from such weighty questions for the future. Ah, Urto calls us to luncheon. Let us learn what strange dishes he has concocted for us today!"

Responding to the mood that claimed him, Moura caught Ezra in his arms and tossing him to his shoulder ran with Elsie to the *Yodverl.*

MOURA had said that this was a holiday, and the party had so accepted this descent to the new planet. The whole long day was spent in enjoying the bounty of nature, each one putting in his time as he felt called upon. Ezra continued to stay close to his mother, still fearful of the bounty of life about him, walking gingerly on the warm, resilient earth, drawing back from the spring of the grass as they plunged through it, holding himself away from the leaves and branches of the shrubs and bushes so plentiful in the clearing. It was several days before he ventured to touch anything, although Elsie tried to impress upon him that it was quite all right to feel at home there. Instead, it was all like a mystifying dream to him. He was familiar enough with the plants that grew about the pool in the atol and those that bordered his mother's room, but they were vastly different than these gargantuan growths. Elsie tried to entice him into a playful mood, to romp about and explore the clearing, but all he would do was to cling to her hand.

Later, when the strangeness wore off, he was to find something new to interest him every minute, but he cried the first time that Elsie stood him on the banks of the river and suggested that he wade there, knowing that there were no dangers from snakes, insects or fish. She had to take off her own sandals to show him that it was safe and enjoyable to do so, knowing it was safer here than it had been for her, a child on the African veldt. Of course, the boy waded and swam in the pool in the atol, but he feared the strange yellow water, just as he feared this world without the comfort of the walls he was accustomed to all his short life.

So two quiet days passed. Elsie had no other thought in her head now except the joy of this new freedom after the eight long years of enforced incarceration. Now she felt the length of those years and realized how far from home she was. It seemed incredulously impossible, as though it were a dream. Only the strange colors of the vegetation and the sight of her pretty child told her it was not a dream.

She had dropped to the short beach beside the water and stretched her full length on the soft grass, that was purplish in color, with Ezra at her side, staring up into the clear, bright sky above. Urto and Nancy were picking a basketful of a bean-like growth which had been found to be edible and rather tasty. Ubca had walked to the edge of the clearing to study the trees that grew on the edge, while Moura paced back and forth in front of the *Yodverl's* door, deep in thought. Nearby, where the grass grew high so that they were almost hidden from view, the mitu were grazing and chewing their cud. Altogether it was a very peaceable scene. Then the beauty of it was broken as they experienced their first tragedy on Kal.

None of them heard it creeping through the long grass, for it crept with the stealth of a cat, and only when it grabbed one of the mitu and carried it up into the sky were they aware of what had happened, then in wonder they stared at the large shape bearing the squealing cow aloft. It was different from anything they had seen—a body five feet in length, with six hairy legs, grasping the mitu, and a pair of gauzy, almost transparent, wings. That was all they saw, for it had winged above the trees and disappeared above them so rapidly they could not distinguish more of its features, and now they were more concerned with the rest of the herd, which in its terror was tugging at the cords, rearing and plunging in the attempt to run and put distance between itself and the strange marauder.

Everyone came on a run to discover what had happened and to quiet the frightened beasts; then commenced to try to piece a more detailed picture of the thief from the various impressions. Moura, who had been closer than the others, recalled the hideous head with great staring eyes and the color of the body, which was orange, with three or four black stripes across the back.

The incident, however, taught them what they had to fear, and thereafter none of them dared to move about without one of the torch-like weapons that shot a radium ray with a pinkish beam that disintegrated matter. Ezra was ordered to stay close to the ship and not to go afield unless accompanied by one of the adults.

Moura reasoned that the beast would return for more of the easily captured prey, and when it came the following day Ubca brought it down, only in doing so he used but a third of the power of the radium ray, so that the creature was only stunned, and they could examine it before the full power of the weapon swept it into oblivion. Elsie was the one who classified it.

"Why, it's nothing more than a tremendous bee," she cried in appalled surprise. She pointed out its features to the men, and after a little study concluded that it was a drone, since it had neither the pollen baskets nor wax pockets of the worker. In Africa she had kept two hives of bees and knew something of their habits.

Now, making sure that the creature was dead, Moura split it open with the ray, so they could examine its stomach content. They found partially digested flesh and blood and the undigested bones of the mitu it had killed, and by the state of the matter they concluded that the beast was not carnivorous by instinct and had only stolen the mitu out of pique, but on finding the flesh to its liking had returned again for more, even though at the time it must have been suffering from a bad stomach-ache!

After studying the creature some more and feeling that they had learned all there was to learn of this specimen, they turned the full power of the torch upon it, so that it faded entirely from their view, its chemicals allying themselves with the air about. Now the party was faced with the problem of protecting themselves from like thieves. Others may have tasted the blood of the mitu and would come seeking more, but in the days that followed, though they saw quite a number of the great insects winging overhead from time to time, they went about unmolested.

The fourth day after the killing of the big drone

*Anyaka, the Abruian word of endearment.

another descended into the clearing, but shied away when it saw the human beings, instead of coming to attack. Two others were shot down, one by Urto, who saw it descending close to the picketed mitu, and the other by Ubca, when he saw it descending just above Elsie's head one morning as she lay stretched beside the river bank entertaining her son with stories of earth. They only learned later that they really had nothing to fear from the monstrous bees.

CHAPTER VIII

The Yadians

WITH the bringing down of the first bee Moura had straightway questioned Elsie concerning all she knew about the strange insects. Elsie told him of all she had observed with her own bees, but she was only familiar with their appearance and with their honey-gathering instinct, but she recalled that among her books was a volume of Maeterlinck's "Life History of the Bee," and she brought it out for his perusal.

Moura spent some time with the book, digesting all the essayist, playwright and naturalist had to say about the genus hymenoptera. He was struck by their seeming intelligence, their highly developed social structure, their engineering and mathematical capabilities. It was the first time he had been awakened to the fact that insects were so analogous to man in their efforts to establish for the community a positive factor in the scheme of things, and he was struck by the wonder of creatures who so little considered the individual as to make it merely a unit in the chain for the future, learning from them again the futility of putting self above the welfare of the community.

Seeking Elsie again, he asked if she had other books dealing with the history of other insects of her world, and in turn she brought forth W. J. Holland's "Butterfly World" and Darwin's "Voyage of the Beagle," but nothing else dealing with what he wanted, and Moura had to be content with what these offered. However, he gave orders that the next giant bee to descend in the clearing was not to be molested unless it was belligerent, but that he should be called instead.

It was two days before one of the creatures again appeared in the clearing, descending to draw the honey from the beautiful flower whose petals were a brilliant green, its heart scarlet. Once only it turned its great many-faceted eyes upon the three who were in the clearing at the moment—Ubca, Elsie and Ezra—but with seeming unconcern it plunged its long tongue into the heart of the flower. So as not to startle it, no one moved or spoke, and Ubca called Moura forth through the medium of the mind only. Moura came to the door of the *Yodverl* immediately, and on seeing the insect nodded gravely but said no word as he turned toward it. Finished now with the first blossom, the bee turned, ready to seek another, and they watched as it sucked the flower dry of its honeyed water. Then it seemed ready to take wing, to return to its nest and disgorge the supply of honey with which it had filled its storage stomach, but instead of lifting its wings they saw it cock its ugly inhuman head to one side, then slowly and deliberately wheel about on its feet until its eyes swung to Moura's face. A quiver ran through its gauzy wings, transparent, but heavy enough to sustain its weight in flight, but it did not retreat immediately and took two or three faltering steps toward Moura. Again it hesitated, and now they could hear the deep drone that came from its thorax as the creature began to sway slightly from side to side. For perhaps two minutes this continued, and then it raised its wings and zoomed over their heads, gaining altitude so that it cleared the bulk of the *Yodverl* and sailed away beyond the trees.

Moura turned to his companions. "I find that the creature has a very small amount of intelligence, such as we know it, and that on the other hand its brain has two highly developed centers that control all its movements and act upon the creature as a control of its faculties. I should say that this is nothing more than an inherited trait, its instinct, as one would call it. However, there is also that part of the brain that is open to new impressions, that gives it a slight degree of animal intelligence, allowing it to communicate with its fellows for its simple wants, and to accept orders from a controlling force. And from it I was enabled to learn that in the nest there is some type of controlling force.

"I note in the reference you gave me, Elsie, the observers of the apiary have never been able to discover in what this control of the hive lies, knowing the Queen to be a mere reproductive machine with a brain, sacrificed to her regenerative organs, and have instead perforce been driven to giving the leadership of the bees either to Divine Interference or simply to Nature or instinct itself. However, if these hymenoptera are akin to those of Earth, I believe we shall discover some new secrets for your apiarists.

"As the bee is capable of receiving commands, I have dispatched her to her hive, there to communicate with her fellows what she has observed. If the hive contains this leader, and I am more than certain that it will, we will soon have a second visitor. From what I already gathered from the complicated brain cells of our messenger, I am certain that the creatures already visited here, or even those who saw the destruction of their fellow, were not so much as cognizant of what really occurred, taking it, as they take the presence of our ship, as a circumstance outside of their own province. Thus their leader, who more than likely rarely if ever leaves the hives, is totally unaware of what has transpired out here.

"Maybe my suppositions are wrong and my conclusions are unlikely . . . we can only wait and see."

But three hours later Moura's uncanny conjectures were to prove themselves correct, in the appearance of the four visitors who came to the clearing. Elsie was just finished arranging Ezra for his afternoon nap. Everyone but Moura was in the ship, and Elsie, on coming to the doorway, was surprised and at first frightened when she saw the four creatures facing her husband. Then she saw there was nothing to fear; that Moura was again proving the power of his mind. Two of the bees she recognized as the ordinary worker bee, who stood a little distance from the man and the two smaller bees with which he appeared to be in conference. Studying these two creatures, she saw where they differed from the ordinary bee, being almost half the size of the others, with smaller eyes, but heads twice as large as their companions. Nor were their wings as well developed as those of the workers. Rather they appeared almost rudimentary, scarcely able to sustain their flight. Later, when she saw them climb to the

backs of the larger bees when they were ready for flight, she understood a little more of them and realized what they were.

Now to her ears came a sound scarcely audible to her earthly ears, a sound so high in the scale as to seem half an illusion to her and which made her wonder if she truly heard. Moura, she saw, was all interest, his eyes intense as he gathered the tale the strange little bees were telling him. Ubca came to the door and stood with her as she watched the silent communion. Once or twice Ubca exclaimed at something, for he, too, heard the emanations that came to him from the bees' brain, but it was often difficult for him to translate it all to his own understanding.

FIFTEEN minutes later, when the bees took their departure, with the two small deformed bees on the backs of the two ordinary bees, Moura sought to explain to the others what he had just learned. He was silent for a while as he collected his thoughts and arranged them for the others to understand, but his eyes shone as they always did when he had made some astounding discovery, and he spoke as one who is thinking aloud.

"It is as I surmised. Strangely enough no earthly apiarist has been able to discover it for himself as yet. The hive has a brain, as demonstrated by these two queer little creatures that are but a section of the brain that controls the welfare of the hive . . ." He looked up and faced his audience. "That is what it is—these two malformed bees are no more than two of the brain's segments, of which I gathered there are from twenty to thirty altogether. It is hazy to me as yet, and I must ponder it more, but I think I can understand it.

"Controlled by them, receiving the unspoken command from the brain, the creatures of the hive perform their duties as they are directed. And from what I can judge so far, nothing is left to chance . . . to instinct; everything that is accomplished in the hive is the premeditated course as laid out by these smaller creatures, who are born to determine the destiny of the hive. To each act of the worker bees one of these brain segments is the controlling force. Those working in the honey are controlled by their monitor, the wax-workers instructed by the proper foremen, the day's foragers are dispatched upon their duties by command, to bring certain honey from certain flowers, pollen for the bees' bread, and the chemist who measures the portion of formic acid for the preservation of the honey store does not act without orders from the brain.

"Nothing can go on in the hive without the directing force of this segmented brain, the number of drones that the Queen is to produce, the number of young princesses, the need for new combs, new cells, the hour for the swarm when the present hive is filled to overflowing and there is no more room for the thousands of adult bees with the cells filled with young bees ready to emerge. Of course, this brain is not infallible, any more than any animal's brain is infallible. It makes its mistakes that have to be corrected, else the hive suffers. But since the brain segments are born to perform their duties, they know no other life and follow out the trend of their destiny as best they can.

"Elsie, in your study of your beehives at home, did you never have occasion to note that in the Queen's retinue, as she went about her work of depositing her eggs, that she was always followed and surrounded by the distorted smaller bees, such as the two you saw here today?"

Elsie shook her head. "No, I was never particularly observant, Moura, and you know that unless one is a trained observer with a glass hive it is difficult ever to see the Queen unless she is about to swarm, at which time she is so thoroughly surrounded by her guard that it is difficult to make out any details of her, let alone of those that accompany her."

Moura nodded his head.

"Of course, it is difficult for us to ascertain whether the facts true of the bees of Earth are the same for these monster ones of Kal, but we can conjecture that the genus hymenoptera is the same the universe over, just as man is the same as far as we of Earth and Abrui have discovered, and there is only the difference in color and brain-lobes to differentiate them. No doubt the entomologists of Earth have never discovered the brain segments of the hive because they haven't looked for them, and if they saw one stray they merely recognized it as a deformity."

"But, Moura, how can the brain segments, as you call them, develop in the hive? We know that as an egg the queen bee does not differ from the worker until it is given particular food to develop it, and that the drone hatches from her unfertilized egg. How, then, do the brain segments come into being?"

"I did not have the time to go into that thoroughly," said Moura, "but from the two creatures' brains I believe that they themselves control the birth of their young in some secret way, innoculating the newly-laid ordinary worker egg of the queen with some virus from their bodies when they know the necessity for the birth of fresh brain matter.

"These two creatures, who visited us, appear to be that section of the brain that controls memory and the future welfare of the hive. When the worker we dispatched arrived in the hive they immediately received its impressions of the strangers in their midst. They became fearful of our intentions and did an unprecedented thing in leaving the hive to investigate for themselves!

"I suggested to them the thought that they invite us to the hive so that we may inspect it for ourselves, so don't be surprised if we receive another visit from the Yadians, as they designate themselves, with an invitation to call upon them shortly."

Elsie and Ubca were filled with questions now, and Moura found himself called upon to tell more that he learned of the creatures.

"Do you believe," demanded Ubca, "that the creature we came to seek here on this planet is of this race of beings, Sa Dak?" His voice was filled with concern and bewilderment.

CHAPTER IX

What Moura Had Learned from the Yadians

SLOWLY Moura shook his head. "To tell you the truth, Tor, I do not know. I have already asked myself the same question. As yet I have made no attempt to communicate with the one we came to seek, so I can tell you nothing of him, but I have the suspicion that he is not. The vague impression that I obtained of

him upon Venus leads me to believe him different from these bee creatures. In the first place, I am more than certain that he is a male, not the sexless thing that the bee-life presents to us. And because of his intelligence, the power of the mind I met across space, he cannot be a drone bee, but one with fully developed faculties of thought and perception. No, I am almost certain he is not of them but rather of one of the other species of beasts that inhabit this world.

"Then there are others?"

"Yes there are, for while communicating with our two visitors I felt the impression of another type of creatures that they are aware of and have had dealings with. But look, our friends are returning!"

Glancing upward, the others followed Moura's eyes and saw that perhaps a dozen bees were winging toward them. On the backs of three of them they could see three smaller bees crouching, their own rudimentary wings incapable of bearing them aloft. One by one the three carrier bees alighted before the *Yodverl* to allow their riders to climb off, while the remaining bees alighted here and there about the clearing, causing discomfiture to the mitu, who were grazing near by. Moura called out to them in their own language, and they calmed down under his assurance that all was well. Then he turned to the three intelligent bees.

For a short space of time they regarded the strange silver man before them, with their large composite eyes that for all their size were smaller than that of the ordinary bee about them, and near-sighted. In fact, the bright light of Kal's brilliant sun appeared to bother them as they shook their heads occasionally. And Moura sensed their discomfort. Looking toward the *Yodverl's* doorway, he meditated as to whether the creatures would be willing to go within. Turning to them, he made the suggestion mentally, picturing for them the dimmer inner chambers of the ship. He was rewarded by the immediate action of the three bees toward the doorway and hurried to lead them in.

He did not take them beyond the anteroom, but seated himself at his desk and faced the three insects, who ranged themselves before him, paying no attention to his companions, who had come behind and unobtrusively took chairs against the wall.

Moura now gave his full attention to the brains, knowing no better name to designate them by, and recognized that the creature between the two was their leader. It was true, for now he "heard" the impulses from that creature's brain, which his own brain in turn translated into words he could grasp. For the next hour he communicated with it in that manner, though he found that it was necessary for him to "project" his own thoughts upon the bee's mind, for it did not have the power to translate the thoughts for itself, but had to depend, instead, on the pictures he gave it. It was a strange dialogue, and at times Moura was hard put to it, to understand fully the other's consciousness, for, being creatures of two vastly different species with a different standard of values and intelligence, comprehension of the other's mind was sometimes vague.

It was difficult for Moura to explain to the beast from whence they had come, and afterward he was not certain that it understood; but since it did not question him he did not bother to explain further. There was only one thing that the brain appeared to have assurance for, and that was to know that the Solarites meant her people no harm. Moura pictured for her (the bee had given him to understand that the brain segments like the worker bees were sexless but with female potentialities) the act of the renegade drone who had stolen the mitu and which they perforce had had to kill.

The brain had no comment to make upon the killing, but instead communicated to Moura that there had been a murdering of the worthless drones in the hive that had outlived their usefulness, but that several of them had escaped from their irate sisters. This drone, then, was one of them and his going was negligible—in fact, rather welcome.

Moura therefore went on to interrogate the bee about the planet, attempting to learn all that it was conscious of. In this he found a number of difficulties, for it was to be seen that the creature's perception was not clear, and it knew only of things that pertained to the hive. He was almost ready to give up the experiment when suddenly he caught something of interest from the creature's brain.

FOLLOWING up this lead, he discovered something of what he had wanted to know. It was a word he was incapable of translating that had caught his interest, a word that sounded to him like "Dada." Immediately he put the question to the bee, demanding to know what a "Dada" might be. At the question the other two companion brains began to nod, moving nervously on their feet, and to the three Solarites came the sound of shrill, high-pitched voices, so high that it was only occasionally that they caught the vibration of sound.

After a few minutes their excitement had subsided, and now the middle bee turned again to his interlocutor, and Moura learned some of the history of the Dadans and Yadians.

It appeared that a long time ago, many thousands of generations ago, the planet had been literally overrun with creatures of all descriptions, beasts such as Moura could not name. Then it was not a happy world, for the myriad creatures warred upon each other, battling each for its life, one feeding on the other, and of them all the bee colonies suffered most greatly, since they were not bloodthirsty, subsisting instead on the bounty of nature, the sweet water of the flowers. Still, they defended themselves valiantly and courageously, but the most victorious of all the battlers were the Dadans, who had organized themselves into great bands that warred on all other species alike until the time came when only those they wished to live could do so. And they were still the conquerors, demanding yearly tribute from the Yadians, quantities of the royal jelly that they sent for each year, and because the Yadians were peaceable, and because the Dadans held to their own territory beyond the boundary of the high mountains and kept the world free of the more vicious maurauders, the Yadians were glad of the arrangement and handed over a store of their precious royal jelly without question.

Moura wanted to know more about the Dadans, their appearance, their habits, but this the brain segments could not tell him, for they admitted they had never had intercourse with them, directing only that the workers prepare the tribute and carry it to the designated spot with the coming of the raw wintry winds from the northward.

Moura conversed with the bees a little longer, learn-

(*Continued on page* 185)

The Great Catastrophe of 2947

By Woods Peters
Author of "When Inca-Land Revolted"

ON the island of Hawaii is the fire pit of Kilauea, one of the most famous volcanoes in the world. Mr. Peters, who is not altogether a stranger to our readers, lives in Hawaii and knows his territory. But besides our interest in even phenomenal volcanic propensities, there might be others—as take, for instance, the conjurations brought to life by the vivid imagination of a capable writer, who can build plausibly on strange and phenomenal sights that might present themselves in the vicinity of an enormous volcano.

Our author does very creditably indeed in this story.

SCIENTISTS of the world had for many years been speculating upon the direct cause of volcanic activity. In the early 1900's, Dr. Thomas A. Jaggar had made a name for himself through his studies along this line, particularly in reference to the fire pits of Kilauea and Makuoweoweo on Hawaii, and a few years later extended that investigation to volcanoes of note in America and Alaska.

It was the general concensus of opinion that the earth was a shell of some sort, some saying that the outer crust lay upon an inner lake of molten lava which was compressed solid through the tremendous pressure exerted by the continuous cooling exterior. Others advanced the theory that the heat which caused volcanic outbreaks with their great streams and fountains of liquid fire were due to unknown natural gases which, when liberated, caused a chemical action in the surface rock turning it to the melted state through the generation of intense heat. It was this latter theory which gained the greater credence during the latter part of the 20th Century, and which seemed to have the better basis of fact as shown by the speed of sound transmission through the earth from point to point.

The world now knows differently. The actual cause for such outbursts has for some years been common knowledge, but few of the world's inhabitants know of the series of events which led up to that discovery.

I was a young cub reporter on one of the leading papers in the Hawaiian Islands, when the Great Catastrophe first threatened the earth. How I came to be assigned to the story, the greatest in that day, is even yet somewhat hazy in my mind, but as recollection has it, it was a series of minor incidents that thrust me into the very center of things and incidentally caused the loss of my job through failure to report back from a minor assignment. My continuous absence eventually became noticed by friends in the islands, and the finding of a package of miniature films, with a hasty and unusual notation scrawled across the face of the carton, eventually led to a search that established contact with me and later opened up a way to save the world from destruction.

For a number of years vast cataclysmic disturbances had thrown the nations of the earth into a condition bordering on panic. Volcanic activity was developing at frequent intervals at points where there had been no evidence prior to that time of any sub-surface movement.

You will recall, those of older years, how the great city of Paris was the first to succumb. A crater developed shortly after midnight only a few blocks from

where the Eiffel Tower once stood, and within a few hours the place that had been Paris lay many feet deep beneath a slow moving mass of molten stone.

A few months later a similar occurrence took place on the American continent, in which thousands of acres of the Middle West's finest agricultural country was inundated by the fiery flood. This outbreak was followed at frequent intervals by others in different agricultural sections, and while the loss of life was not heavy at the time the effect on the country over a period of months was devastating through the loss of food supplies. America, instead of being the world's supply depot for foodstuffs, became a beggar in the bread line, asking succor from other nations of the earth.

Russia, Japan, Germany, inhabited sections of South America, all took their turn, and though leading scientists considered it as only an upheaval of nature from some unknown cause, it remained for an ambitious editor of one of the smaller papers of Denver to first

Illustrated by MOREY

When consciousness returned, I was in what seemed to be a huge underground cavern, lighted by the same strange blue light which cast a weird and ghostly radiance over the surroundings. Small pots of what seemed to be red fire, but which I later learned to be controlled lava "stoves," were scattered at regularly spaced intervals, giving forth heat and adding their unnatural glow to the scene.

call attention to the fact that every outbreak occurred at a point where it would do most damage to the inhabitants of the surface world.

Investigators pooh-poohed the idea, and it was while the controversy was still rife in the editorial columns that the great pit of Kilauea on the island of Hawaii suddenly went dead.

Kilauea had for many years, ever since the dawn of history in fact, had periods of quiescence, but never at any time had there been an absence of heat, nor had steam for an immemorial time ceased to rise from the ground near the pit.

But suddenly she died, completely and with a startling suddenness that caused surprise and some consternation among the residents of those Pacific islands. They had so long been accustomed to their "safe" volcano, that the abrupt cessation of evidence of subterranean heat caused no little alarm as to what had actually happened.

This alarm was further enhanced by a peculiar underground rumbling, faintly discernible in the instruments of the volcano laboratory, but which noise seemed to possess the properties of a heavy stream of running water falling through great cavities. Likewise, at the same time, strange and unknown currents were manifest in the ocean near the islands, which in places developed into powerful whirlpools.

Two of us were assigned by the city editor to go to the island of Hawaii and see what we could stir up in the way of a story from information to be gained on the ground. Wilson, a feature writer, and myself as a sort of errand boy embarked on a small inter-island ship, the *Waipunalei,* and the following morning arrived in Hilo, the county seat of Hawaii.

For several days we scouted around, but could learn nothing beyond what had already been filed with our paper and given to the press of the world, and we had made up our minds to return the following day, leaving the story to the local correspondent in Hilo.

Having nothing particular to do, I hired a car and drove the thirty miles to the volcano for a final visit and as a means to kill time. The hotel was practically deserted when I arrived, so after dinner I started out alone for the darkened hole which was formerly the fire pit.

It was a pleasant ride, and with the marvelous Hawaiian moon shedding its soft rays over the tropical landscape, I drove on, idly dreaming away the moments.

About a mile and half from the dead crater the road swept into the open, where one could gaze out across a vast expanse of old lava toward the pit. It was there I had my first shock.

A pale luminous light, barely to be seen, and of a somewhat bluish tinge, seemed to hang suspended some hundreds of feet above the extinct crater. Soon a second similar light joined it, then a third and a fourth. All of them seemed to rise together and fade into the haze of the Milky Way.

As I approached the pit, leaving my car some three hundred feet from the rim and going the balance of the way on foot, a feeling of eery uncertainty came over me.

I crept to the edge and gazed over, but the chasm seemed as black and cold as ever, and there was no evidence of anything unusual. I had about decided it was a trick of the imagination and turned to go when a faintly cracking sound seemed to permeate the air and a faint bluish radiance rose from within the pit, to hang suspended in the air at about the ground level.

Anxious to retain the impressions of the moment, I hastily searched my pockets for pencil and paper, but found nothing save a packet of films which I had exposed during the day. It was across the face of this that I scribbled by moonlight an abbreviated description of the light above me and which later led to the discovery of my whereabouts.

Replacing it in my pocket, I started a hike around the edge of the crater in an effort to get closer to the glow. I had gone perhaps a half mile across the rough lava, stumbling through the darkness, when IT suddenly moved toward me with such speed that I sprawled headlong in the nearest crevice I could locate and pulled my coat over my head to hide my face from the light. It must have been at that time the packet of films fell out.

The radiance was unnerving, and peering through a small rip in the fabric made in my hasty scramble, I saw it sweep directly over me. At the same time I was conscious of a sudden tingling as of a high potential shock or charge accompanied by a fading of the landscape, and then oblivion came, bringing blessed relief from the terror of the Unknown.

When consciousness returned, I was in what seemed to be a huge underground cavern, lighted by the same strange blue light which cast a weird and ghostly radiance over the surroundings. Small pots of what seemed to be red fire, but which I later learned to be controlled lava "stoves," were scattered at regularly spaced intervals, giving forth heat and adding their unnatural glow to the scene.

As my eyes became more accustomed to the peculiar half light. I sat up and for the first time noticed the forms of some sort of creatures standing about me.

Small, almost to the point of tinyness and extremely slender, with eyes that seemed to take up the greater part of the head, eyes that radiated a piercing greenish light, they stood in an irregular half circle. Each was dressed in a sort of metallic suit which appeared, however, to have all the flexibility of the cloth of our world. A small belt, studded with lens shaped knobs of a glass-like substance, encircled the waists, and suspended from each belt was an object, which I first took to be a flash-light but afterward learned was a weapon designed by their scientists for combating the human race. You are already acquainted with the devastating effects of this "innocent" instrument.

Surmounting the heads of each was a cone-shaped object built up of sharpened rod-like objects, arranged with the points down. This afterward proved to be a device operating on an electrical principle combining the repellent forces of negative charges automatically induced and operating against the negative potential of the earth, for the purpose of lifting the wearer against the force of gravitation. Counter "rays" (for lack of a better term) could be shot from the studded belt to control the direction of flight in the subterranean channels or above the surface of the earth. It was the discharge from the cone structures that I had first witnessed rising above the rim of the crater.

AT this point it is advisable to go back to the point of my disappearance from the surface of the earth and take up the sequence of happenings above ground.

My absence from the hotel was not particularly

noticed, visitors frequently spending the night at the pit or at homes of friends in the volcano district, and even on the following morning, when the car I had driven was located in the parking space near the crater, there was still no particular anxiety felt, as the authorities were acquainted with me and knew that I had been accustomed to make hikes about the section in times past and they presumed that I had merely strayed off on some expedition of my own.

It was not until late the following day, when Wilson sent a frantic phone call to the hotel in an effort to locate me, that an investigation was begun.

At the same time, one of the few tourists staying at the hotel reported the theft of some $40,000 worth of jewels from a locked case in his room. The time of the theft could not be definitely placed, owing to the fact that the jewel box had not been opened for some three days prior to the discovery of the loss.

Immediately one of the guides employed by the hotel reported that, on the night of my disappearance, he had been hiking back from the pit with a small party of tourists, when they had suddenly heard a whirring sound as of a muffled airplane motor in the direction of the aviation field. This field had been built by the army near the pit. Evidently what he had heard was the soft buzzing of one of the Unknown Flyers speeding out on a reconnaissance flight.

Naturally the police put the facts together and decided that I had been instrumental in the theft, had fled to the pit where a rendezvous had been arranged with a fast plane, and so had made my escape.

This, combined with my failure to appear at the office of the paper or to report to them my whereabouts caused my summary discharge with no further investigation on their part.

Among my friends there was a *hapa-haole* or half-white boy, who had accompanied me on a number of my hikes. He felt that there must be some other reason or explanation. As he expressed it, "My friend no steal; *pilikea* some place."

This boy, Kanamoa, went to Hawaii during his vacation period, which came some three and a half weeks later and began a search of his own and the day before he had to return, came across the packet of films in the rocky crevice. He also located in the same spot a fragment of my coat torn free in my scramble of that fatal night.

Returning to Honolulu, he went directly to the editor of the paper with his evidence and finally convinced him that there had been foul play of some sort.

By the time this had been done, however, some seven weeks had elapsed and a new menace had made itself known to the world of humans.

Reports had come in of cities at widely spaced intervals that had been teeming metropolises one day, and the day following, when outsiders drove or flew within the environs, these cities presented an appearance appalling to see. Streets were littered with dead, some lying and some sitting or standing erect. Many buildings stood as before, but at a touch crumbled into dust. Bodies vanished at a breath, and cars or trains proceeding along the right of way, upon reaching a certain spot plunged headlong into a mass of impalpable dust. Some powerful disintegrating force had apparently been in action, which destroyed the cohesive properties of animate and inanimate objects alike.

Simultaneously huge crevices filled with molten lava had made their appearance, checkering the inhabited areas in all directions, doing no tremendous amount of damage immediately, but effectually isolating every community from its neighbors. Travel by airplane was the only method of communication, and that seemed safe only in the daytime, for when night fell planes, taking off with passengers or freight, would simply disappear, with no trace left. Occasionally in settled areas along the airways, a light thud would be heard, but on investigation nothing would be found save a small pile of peculiar ash, and no explanation could be offered as to where it came from or what had caused it. But the planes were never seen again.

It was at about this time that the volcano observatory authorities at Kilauea hit upon the plan of installing audio intensified microphones, in an effort to hear more clearly the subterranean noises, and it was due to these that communication with me was eventually established.

One of the observers had noted that there was a monotonous musical sound appearing to come from the depths of the earth. There was a higher pitched melody of six or eight notes with a base accompaniment of but two tones. This observer also noted that the base notes came at irregular intervals, with no apparent connection with the higher pitched melody. It was further observed that these "musical renditions" for want of a better term, came at exactly the same time of day and lasted for precisely thirty minutes.

The paper's local correspondent on Hawaii naturally filed the story to Honolulu for publication and rebroadcast over the World Press lines, and it remained for one of the operators on the Honolulu station, who had formerly been acquainted with me, to attach significance to it. He immediately presented the theory to his superior and gained a furlough for sufficient length of time to make an investigation.

TO return to my own plight, after recovering consciousness and gazing about me, my eyes finally noticed one of the creatures who seemed to be a leader or chieftain. Somewhat taller than his fellows, and with a semi-luminous figure of a woman's head emblazoned across his breast, he stood quietly with an air of authority waiting for the strange prisoner to speak.

Presently he stepped forward and to my amazement uttered in a clipped, squeeky voice words in my own language.

"We have need of you. You will not be injured as long as you obey the commands of Kasala, our Queen. Should you disobey, there is always the Fire. Come!"

"But—but—say! Where'd you learn our language?"

"That you will know later perhaps. Kasala desires your presence."

I felt myself lifted by one of the attendants and again saw the bluish glow I had first noticed above the pit. There was a sense of rushing walls and terrific wind, and I was set down before a doorway of stone delicately hinged and told to wait. A few minutes later I was ushered into a magnificent hall at the end of which stood an elevated platform on which Kasala sat enthroned.

"Stranger," she said, and her voice had the same high squeeky tone of the chieftain who had previously addressed me, "stranger, you already know me. I am that being of whom you speak in your language as 'Pele'."

Immediately a great enlightenment came, for Pele was the mythical Hawaiian goddess of volcanoes, a being who was supposed to have the power of materializing herself in the form of a beautiful maiden or on occasion that of an old hag. It was said by the natives that she always appeared preceding an eruption, and brought immediate and fiery retribution to those who failed to grant her requests. All through history the Hawaiians had held her in fear and tendered votive offerings to her, throwing them into the pit of Kilauea. It had long been the theory of psychologists that the legendary beings of mythology had an actual basis in fact. Now I had the proof of that belief.

To go into details of my experiences in this vast underground world would require too long in the telling, and as this is the story of the Great Catastrophe, many of the incidental features have no particular bearing.

I was well treated, fed on a peculiar but not unpalatable synthetic food manufactured in their laboratories, and gradually I was allowed more and more freedom about the place.

I was equipped with one of the cone devices and a studded belt such as the inhabitants wore, and full instructions for the manipulation of them were given me. Weapons I was denied, nor was I permitted to enter the channel leading to the Kilauea fire pit.

My duties were to lay out a plan of the world of humans and advise concerning points of greatest vulnerability. This latter I naturally avoided as far as possible, giving leads that would cause the least possible damage and yet retain my freedom, for the more I saw of the situation beneath the surface, the more I felt that the salvation of the world rested exclusively upon my shoulders.

The underground people had a progressive civilization, keeping crews of "men" continuously at work excavating new tunnels by means of greatly enlarged models of their disintegrator flashlight pistols carried in their belts. The ramifications of these tunnels extended throughout the interior of the world, and it was a by-product of this work which had caused the volcanoes known all through history. It was also a utilization of this by-product which was the means of bringing about the lava outbreaks in strategic points on the surface throughout the world.

It seems there was a peculiar gas liberated by the action of the ray, which gas, while comparatively harmless when not exposed to the atmosphere of the earth, immediately caused intense heat when permitted to combine with some of the rare gases found in minute quantities in the surface atmosphere. These gases seemed to be absent beneath the ground level except when mechanically liberated from tube-like containers used in keeping the "stoves" in operation.

In an effort to keep their air pure, they had built up extensive conduit systems to carry this generated gas from the points of excavation to surface outlets. These naturally remained unchanged throughout the centuries and accounted for the volcanoes we of the surface had known. Cessation of digging activities at certain periods had likewise caused a quiescent period in these pits, but in many cases small exhausts from minor tunnels were sufficient to maintain sufficient heat to cause steam when the actual fire was absent. A reestablishment of work on major operations would naturally cause a return of the molten lava, the amount determined by the extent of the subterranean activity.

IN one of our conferences, Kasala explained both the cause of the war with the humans and their understanding of our language.

It seems that these ray-machines, when placed in line with a powerful radio beam, resulted in an instantaneous and frightful explosion of the machine, bringing about tremendous loss of life to the underworld creatures and wreaking untold havoc in the tubes and caverns.

Their scientists, in an effort to solve the cause of the explosions, had developed instruments similar to our radio receivers and had discovered these outside influences. Likewise, they had naturally intercepted some faint traces of our broadcast programs which had later been magnified to a point of audibility. It was through a study of these that their research bureaus had finally deciphered the meanings of most of our words and consequently were able to learn the language.

You will recall that about 1955 certain power companies had started some experiments on beam transmission of electric and radio power through the earth from point to point. An unfortunate crossing of these beams with tunnel and hall lines had created the devastating explosions. With the further development in the first half of the twentieth century of beam transmission, these explosions came with greater and greater frequency, and finally, driven by the desire for self preservation, Kasala and her people had been forced to declare war upon the race threatening their existence.

I was called daily by Kasala for conference and soon found her to be a person of extreme moods. Playing for time and at least a temporary cessation of war, I endeavored to create diversions to take her mind from the troubles of her race.

Learning that they had never known the meaning of music until they had intercepted our broadcasts, and had often wondered how such tones were produced, I developed a simple musical instrument based on the common xylophone. Some few weeks later, discovering that the cavern where Kasala was located was near the gas outlet at Kilauea, an idea of communication came to me. It was a slender chance, but desperation warranted the risk.

Modeling a second zylophone for base notes, and anchoring both instruments by metal bars into the solid rock near Kasala's throne, I would sit daily at the close of our conference and play for a half hour for this moody queen. Using the base instrument and counting the lower tone as a dash of the radio code, the higher as a dot, I would play a simple melody on the upper and patiently pound out the call S O S, the internationally known call for help, on the lower.

Meanwhile, I had persuaded Kasala to have one of the radio receivers installed, in order that I might give her some variety in the selections and tell her of the types of instruments used in making the various tones.

At the close of each series of calls, I added a brief warning:

IF HEARD STOP BROADCAST REPLY FROM NPM DAILY THIS HOUR STOP 560 METERS USE CODE ONLY

NPM was the call for the big naval station at Honolulu and was the one through which I felt I could obtain the quickest action.

It was this peculiar series of musical tones, transmitted faintly through the rock, that was discovered by the observatory and interpreted by my operator friend, and one day to my joy, at the close of one of my con-

certs, there came over the radio the high pitched tone of an audion transmitter penetrating through the music of some broadcasting station.

Kasala immediately became incensed at the disruption of the music until I explained that is was apparently the monotonous chant of some Oriental orchestra, and if we would listen for a time, perhaps I might be able to tell what instrument was used and perhaps even duplicate it for her own amusement. In this manner I was enabled to establish and maintain communication.

The day following the receipt of the first message from the outer world, I carefully prepared and sent out the following instructions:

LOCATE MY POSITION ON DIRECTION FINDERS STOP ORDER ESTABLISHMENT NO NEW BEAM BROADCASTS OF POWER STOP SUBTERRANEAN RACE PLANS DESTRUCTION OF HUMANITY STOP SEND SUMMARY SURFACE CONDITIONS STOP MASS ATTACK PLANNED NEAR FUTURE STOP PELE IS A REALITY AS QUEEN UNDERWORLD STOP STAND BY TOMORROW STOP SIGNED ALLISON

A few minutes later the musical program from without was again interrupted by the strange "Oriental music" which brought to my ears the story of death and desolation above. It told of the destruction of the great port of San Francisco and the wiping out of the Panama Canal. Honolulu was virtually at the point of starvation, as were most of the other cities of the world. The sea had dropped some eighty fathoms, but now was apparently stationary. Harbors were gone, standing on dry land and ships that plied the sea would suddenly vanish during the night with no trace left. Planes had given up night flying and transmission of food products was wholly dependent on swift and light scout planes which could pass from point to point during the daylight hours.

The day following, the report from above placed my position as about 4,000 feet underground, at a point some three and a half miles southeast of the pit of Kilauea, directly under a heavily timbered area of the tropic jungle, in what was known as the Puna section of Hawaii.

Meanwhile I had made a rather thorough study of the method of flight used by the underground race, and an idea for carrying the war into their own country occurred to me.

YOU will recall that upon my first cursory examination, I had come to the conclusion that the cone devices operated on some advanced adaptation of the theory of the repellent effect of similar charges of electricity. It was the following out of this line of reasoning, and a more intimate study of the operation of the particular cone with which I had been equipped that finally gave me the secret.

I had found that when in operation, the cone seemed to lift one bodily, attached as it was by a heavy harness to straps about the body. The rate of lift and elevation attained could be automatically set by means of a small control switch incorporated in the studded belt. A row of buttons at the lower edge of the front section of the belt gave control over the rays which could be shot from any one or any combination of the belt "lens." These offered the directional force, once the cone had lifted the wearer free of the ground surface. Their effect seemed to be somewhat similar to the driving power of a rocket, and their "charge" was good for many thousands of miles.

The secret of the pistols carried at their side, I was never able to penetrate, but their effect was devastating. They could be focused into a long piercing pencil of destructive force or broadened into a beam sweeping an area some 500 feet wide when discharged at an elevation of 750 feet.

This beam, which was similar to the one used in their tunneling operations, would cause the instant disintegration of the molecules. As there was no smashing blow to it and as its effect seemed to practically destroy the weight of objects in its line, it had the peculiar result of leaving animate and inanimate forms unchanged until a touch or shock struck them, when they crumbled into the fine impalpable powder or ash with which the world was already so tragically familiar.

Their effective range was not over 1500 feet, which corresponded to the elevation above ground that could be attained with the cones. Beyond that point the repellent forces were too weakened to carry the weight of their bodies. My own cone, with my heavier form, would not lift me much over 1200 feet at the surface of the earth, I was informed, though underground, where the forces of gravitation were somewhat lessened by having rock on all sides, I was able to sail at will through the highest vaults and halls, some of which farther in the interior extended to a height of perhaps 3000 feet.

Accustomed as they were to the semi-darkness, the people of the Underworld found that they could not stand the light of the day above ground. This accounted for the fact that their raids took place only at night, and further accounted for the second fact that no one had ever seen the enemy, for their tiny bodies, flying through the night air at an elevation of a thousand to 1200 feet, and passing with the speed of the wind, would be observed only by the barest chance and then only should they happen to be caught in the rays of one of the army's searchlights. Even then the chance of seeing them was slim.

My trips about the nearer corridors and halls convinced me that a final mass attack on the humans was being planned and might be launched in full vigor at any moment.

Realizing the urgency of the situation I returned to Kasala and attempted again to play for time, but without much success. She informed me that the attack would come as soon as all the weapons were recharged, which would require about one and a half weeks longer. This information I immediately communicated to Jamieson listening in at the observatory and further told him that I had explained to Kasala that the most terrible blow to the human race would be the destruction of Honolulu. I had pointed out that with Honolulu gone, it would be impossible for the world's planes to make the hop from America to the Orient between dawn and dark, and should their mass attack fail for any reason, the preliminary destruction of Honolulu would bring all humanity to the point of starvation through inability to transmit foodstuffs and they would rapidly die off of their own accord. I further suggested that this attack by her warriors take place at midnight two weeks from the day of this carefully planned conference with Kasala.

At that point Kasala forced me to cut off my "concert" and the frantic appeals of NPM coming through to me, which I was unable to answer or explain, made me more fully realize the desperation of my people.

The day following, however, I got through to Jamieson the following detailed message:

JAMIESON INSTRUCT SHOPS PEARL HARBOR CONSTRUCT SUFFICIENT NUMBER ELECTRICAL MAGNETIC BROADCASTERS RADIATING NEGATIVE POTENTIAL MINIMUM DISTANCE 2000 FEET TO RING OAHU PLACED AT INTERVALS OF 1000 FEET STOP SET ELEVATION AT FIFTEEN DEGREES FROM PERPENDICULAR POINTING OVER SEA AND TURN POWER ON AT ELEVEN O'CLOCK NIGHT OF NOVEMBER TWENTY SEVENTH THIRTEEN DAYS FROM TODAY STOP HAVE ARMY STATION FLAME THROWERS TWO HUNDRED FEET APART TO THROW FIRE IN RING CIRCLING ISLAND AND PASSING OVER MAGNETIC BROADCASTERS STOP INSTRUCT INSTALLATION RADIO POWER BEAM BROADCASTS TO INTERSECT ONE THIS POINT TWO POINT DUE SOUTH WEST NINE HUNDRED FEET SAME DEPTH THREE SEVENTEEN DEGREES WEST OF NORTH FIVE THOUSAND FOUR HUNDRED FIFTY FEET FROM THIS POINT AT DEPTH OF THREE HUNDRED EIGHTY FEET ABOVE SEA LEVEL STOP IMPERATIVE DO NOT PERMIT RADIO POWER BROADCASTS TO BE TURNED ON EXCEPT ON MY ORDER THEN ONLY STATIONS BY NUMBER AS GIVEN ABOVE STOP RELEASE WORLD PRESS NEWS THAT WAR WILL CEASE TWO WEEKS TODAY STOP STAND BY TWENTY FOUR HOURS WATCHES BEGINNING NOON TWENTY SEVENTH SIGNED ALLISON

FROM that time on I was with Kasala continuously, playing for her, aiding in her plans, drawing detailed maps of Honolulu and its environs with the more strategic points noted and daily sending out press stories of the preparations and doings of the Underworld.

Kasala's chief lieutenants and I made lengthy trips throughout the Underworld. I located vast deposits of precious minerals, coal and oil, of which the world had long thought the latter two exhausted. I described to Kasala and her leaders the beauties of the outer world, the progress of our civilization, and the many electrical and mechanical devices which had been perfected by humanity and which would be of inestimable benefit to the people of the Underworld, once humanity was conquered and these things were at the disposal of the Lower Peoples.

The final day came. Kasala, a few of her generals and I sat in the throne room, myself playing softly simple melodies and occasionally tapping out some bit of descriptive material on the lower accompaniment.

At eleven o'clock, the army for the first attack started for the surface—some 4,000 warriors. I tapped the two words: ATTACK STARTING, then anxiously waited for the result. Almost instantly came a brief and laconic message, POWER ON.

At ten minutes past twelve came a second amazed dispatch, the operator at NPM apparently being so startled and unstrung he could scarcely send.

THOUSANDS PECULIAR BODIES CRASHING LIFELESS FROM AIR AGAINST MAGNETIC BROADCASTERS

I answered merely:

GOOD STAND BY

At one-fifteen Kasala showed extreme nervousness. At one-thirty she sent a second attacking party. Again I flashed the word.

And an hour and a quarter later NPM flashed through:

SECOND ATTACKING PARTY ANNIHILATED

When four o'clock came, Kasala ordered a third battalion out, and a few minutes after five a third report from NPM told of the city again being saved.

Immediately I called Jamieson with instructions to have the radio power-beam crews stand by, and should I not call by eight o'clock to have all three stations put in operation. Immediately following that, wide beam broadcasts throughout the world should sweep every portion of the earth's interior with their power lines. It would effectually annihilate the Underworld Peoples, and should he fail to hear from me by that hour, he would know that I was no longer among the living.

I had scarcely finished my mesage when one of Kasala's officers jerked me from my seat and hurled me before the Queen.

"You, of the Upper Peoples, where are my men?"

Her body shook with a terrible passion of hate. "You planned this. You have betrayed my confidence. Speak! The Fire waits your miserable body."

"Kasala, my Queen, I ask that you hear me, then you may do with me as you wish.

"I am a human, one of the Upper Peoples. We have many things that will be of service to you, many things you need in your underground world. You have waged an unjust war against us. You have caused untold loss of life and suffering. You, yourself, have lost some thousands of warriors. Let us call the score square.

"You can never conquer the Upper Peoples; they have the power to kill you, every one; and should you not hear me, within a few short moments there will not be a single being alive beneath the surface of the earth.

"I have been in continuous communication with my friends." Here the Queen herself raised a ray pistol which she snatched from the belt of an officer and pointed it full at my breast.

"Wait, Kasala! *Your* life depends on it." She hesitated a moment, then said in a voice shaking with anger, "Proceed."

"To prove that I am in communication, I will perform a little experiment. Your name in our language is spelt with the letters 'K-a-s-a-l-a'. We have what we call a radio 'code' or method of transmitting letters through space by audible buzzes sent out over the radio. The code translation of the first letter in your name will be sent as a long buzz, a short buzz, and a long buzz.

"You recall the 'Oriental music'? Listen now and it will send for you the letter 'K'."

I stepped to my xylophones and tapped out:

SEND VERY SLOWLY THE LETTER K

A few moments later a high pitched buzz came from the receiver—zzz zz zzz.

"Now, my Queen, we of the Upper World have long loved our 'Pele.' We understand your war has been waged because you did not fully know conditions. We are willing to forgive and arbitrate.

"As further proof of our power, call all your people from the halls and corridors adjoining the Elto cavern. Leave therein one pistol." A few minutes later I was informed it had been done.

Again I stepped to my instrument.

JAMIESON ORDER POWER ON BROADCAST NUMBER TWO

A moment later a terrific explosion shook the hall and the Elto cavern was found a mass of wreckage.

"Do you want further proof, Kasala?"

"It was an accident. To the Fire with him!"

"Kasala! Do this, and you, too, will die! Order your people from Kaala."

She hesitated a moment, then complied.

JAMIESON ORDER POWER ON STATION THREE

Another crashing detonation that shook rocks from the roof of the hall in which we stood, for Kasala had been a minor ammunition storehouse.

Shaken in mind as well as in body, Kasala hesitantly queried, "What is it you wish, Upper World Man?"

"Only this, Kasala; a cessation of war on the Upper Peoples; an exchange of treasures of your world, which are of no use to you for things of our world that will be of value to you; guarantee of safety for my people, in return for which we will agree that our power lines will be so arranged that no harm will befall you; and my personal liberty to return to the Upper World."

She thought a moment while I anxiously watched the minute hand of my watch approach the fatal hour of eight.

"So be it!'

I sprang to my transmitter and called:

JAMIESON PEACE TERMS ARRANGED RECALL CREWS OF ALL POWER BROADCASTS TILL FURTHER INSTRUCTIONS STAND BY

It was just four minutes before the hour set for the final destruction of Pele's kingdom.

THE world knows the rest, how Kasala's, or Pele's, people drilled a vertical tunnel to the outer world for the transportation of supplies and valuables, how the human race maintained communication with those of the Underworld and arranged their power beams so they would not intersect any of the tunnels to cause damage, how gas exhausts from the underground excavations were so regulated as to do away with the disastrous volcanic explosions which had caused terror to the world in past ages, how special arrangement was made to keep Kilauea, Hawaii's own pride, in continuous but safe operation.

In return, scientists of the Upper World journeyed into Kasala's kingdom to aid in the installation of electrical and mechanical devices to make life there pleasanter and easier.

Her experts taught us the use of the cones, which now for many years have been the popular means of individual transportation. The great lava checks have in some cases been utilized as huge reservoirs for the conservation of water in arid regions, in other places the kind offices of nature have slowly covered them with vegetation that has now hidden much of the ruin of that great war.

THE END.

Beings of the Boundless Blue

By Walter Kateley

(*Continued from page* 141)

Amid indescribable scenes of débris and destruction I saw great hotels half covered with sand; boats and ships left prostrate, high and dry on the land; and strangest of all, countless numbers of ocean fish and animals lying singly and in groups everywhere.

I was overcome by the fury and horror of the scene.

Then the thought came surging into my brain that this was not a moving picture; not even a nightmare.

Something must be done!

I was galvanized into action. I sprang to my feet. I waved the glasses over the heads of the crowd. "It's a cyclone! It's a hurricane!" I cried. "Stop the wind-makers! Shut off the machines!"

THEN I felt the doctor tugging at my arm. "Wait for the cheer leader! Wait for the cheer leader!" he shouted in my ear. "Let's do it up in style. There he is now"; and he pointed to our cheer leader, who had mounted the shoulders of some of his fellows and was signaling his followers to rise.

The sea of humanity around me heaved up like a great ocean billow and surged forward, giving vent to enormous roars and shrieks of applause.

Thwarted, disheartened, horrified, I sank back in my seat, while the great searchlights snatched their beams back under their hoods and the drone of the great cooling machines in the distance died away.

"Well, it's all over," said the doctor as he mopped the perspiration from his brow.

Then he turned a professional eye on my wilted form. "I am afraid the excitement of the race has been too much for you," he said as he felt my pulse. "Perhaps you have been studying too hard of late."

"Let's go down to the hotel where I can get a stimulant," I said. "I guess I am all in."

And as we walked out of the grandstand I related to him what I had seen.

"It may be only your nerves; for apparently no one else saw anything unusual," he said. "But after we have refreshed ourselves we will go out and break a hole in the insulating layer and maybe you can hear something of the affair."

A half-hour later, with pick and spade, we made a hole in a fence corner, behind the hotel, penetrating the Heaviside layer. Then, applying my ear to the opening, I gathered the news of the great catastrophe.

"Now I know why all the great wind disasters occur in the summer," I said to the doctor accusingly.

"Yes," he agreed, "I suppose you are right. And in that case it is an exorbitant price to pay for a little sport, even if your people are mere pygmies."

"I will make a report of this to the legislature," he said, "and if we can convince them that it is true they will no doubt put a stop to the practice.

In due time I graduated from the university and became a member of a scientific experimental society, and at my insistence we turned our attention to analyzing and reproducing my disk of Transite.

After some rather discouraging failures we finally hit upon a method of reversing its influence.

I naturally volunteered to be the first to try its effect on a human subject, with the result that, much to my delight I was enabled to make a successful descent to earth. And without any mishap I was restored to my home and family. Now I am making an honest living at the old job.

THE END.

A Voice from the Ether

By L. A. Eshbach
Author of "The Valley of the Titans"

PERHAPS it is not too far-fetched to say, assuming there is life as we know it, on another planet, that the story of that planet would, in many ways, show considerable similarity to the history of Earth. It is more than likely that there would appear in the annals of the other planet, records of the blanket condemnation from well-meaning authorities and experts in specific fields of any revolutionary theory expounded by their contemporaries. It seems to be in the nature of things. But what the hero-scientist of this story tells his fellow scientists had been absolutely unheard of and is beyond their conception. The author unravels the thread of his story in a most ingenious manner.

ON August 22nd, 1924, the planet Mars was in opposition to the earth. That is to say, the two planets in their perpetual journeying had assumed such a position as to be in one straight line with the Sun, the earth eclipsing the superior planet Mars. A superior planet is one whose orbit is of greater diameter than that of the earth. At the same time, the distance separating Mars from the earth was less than it had been for more than one hundred years. Only 34,640,000 miles lay between the two heavenly bodies.

The night of the 22nd was remarkably clear, an ideal night for astronomical observation. Innumerable telescopes, large and small, were focused upon the red planet. Ingenious devices of various kinds were striving to communicate with the inhabitants of Mars. And, in a little cabin high up in the Adirondack Mountains, I sat before my radio. Far away from any "interference," I strove to make the greatest radio pick-up ever attempted.

I had made rather elaborate preparations for the recording of any interplanetary communication I might receive, securing for that purpose a device working on the same principle as the dictaphone. It differed from that instrument, however, in that it could record words continually for a period of ten hours. This device, the invention of an obscure mechanical engineer, stood within a few feet of the loud speaker.

With practiced fingers I twirled the dials. One pick-up after another rewarded my efforts. A voice raised in song, the wail of a saxophone, the sonorous voice of an announcer—the usual radio programs. Little cared I for these, however, for they were commonplace; I was after bigger game. But Mars continued in that silence which he had maintained for countless ages.

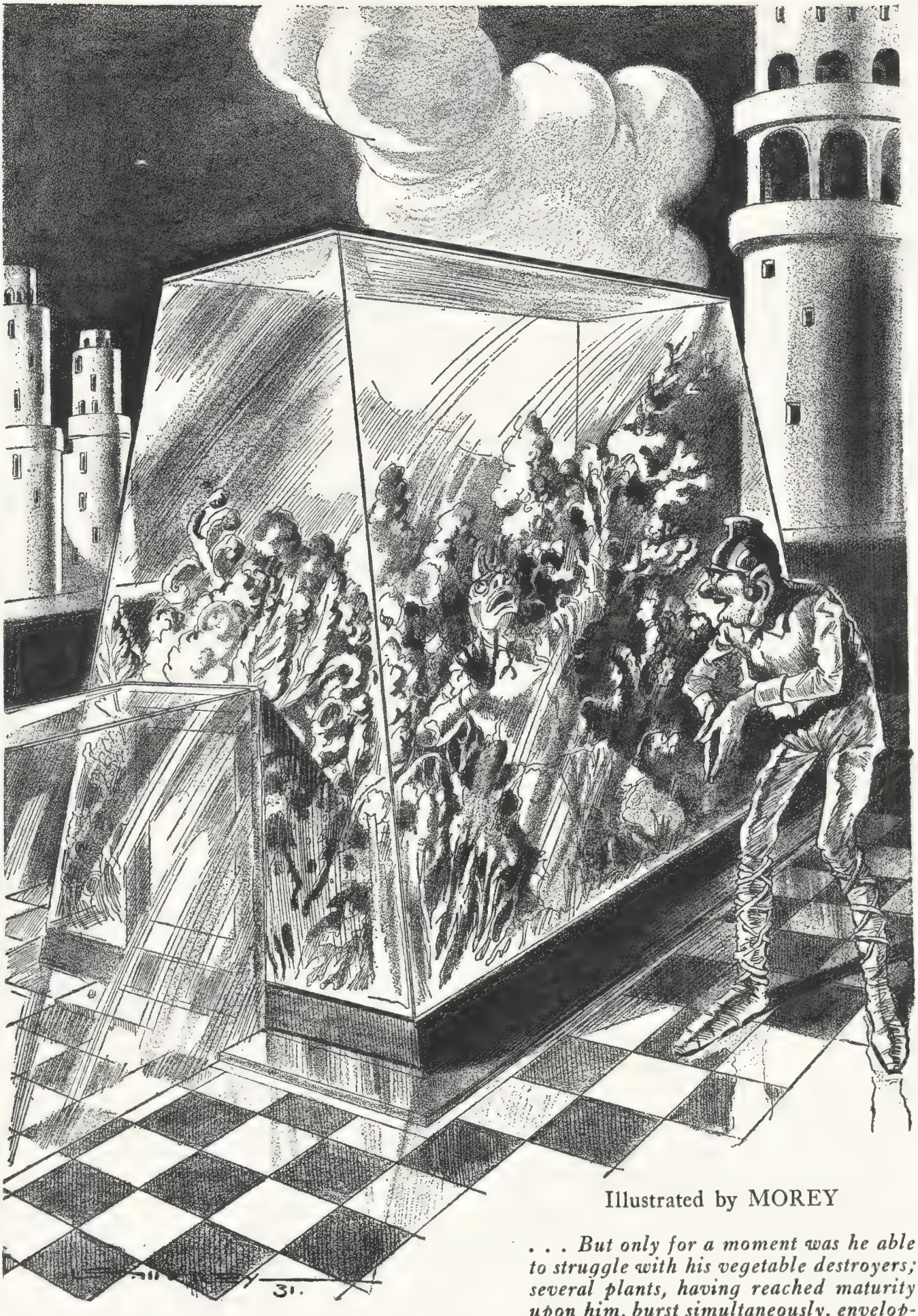
Slowly the hours passed. Midnight came—one o'clock. A fine radio night, I thought, rather hazily—I dozed.

The time signal from the station to which I had last been listening, called me back to consciousness. One—two! I heard the strokes faintly, as from a great distance. Then, suddenly I raised my nodding head erect; I was fully awake.

A discordant shriek of static assailed my ears. A frightful howl, like that of a tortured imp, filled the room. Then, as suddenly as the coming of the static, silence, oppressive, heavy, fell like a mantle over the the radio.

And then I heard the —Voice. Clear and loud it came, unmarred by any interfering static. It was a shrill, piping voice, which, in the course of its narrative, traversed the entire gamut of emotion.

I was spellbound. A feeling of triumph pervaded my being, triumph intermingled with awe. I had succeeded! Victory! I was certain that I had received a message from Mars. I trembled with excitement. Hesitantly I reached toward the dials—and drew my hand away before it touched the radio. I was held back by the thought that perhaps I might break the tenuous thread which held that distant station in communication with the



Illustrated by MOREY

. . . But only for a moment was he able to struggle with his vegetable destroyers; several plants, having reached maturity upon him, burst simultaneously, enveloping him in a thick cloud of dust.

earth. At that, there was no need of adjusting the dials, for the reception was well-nigh perfect.

Eventually, the excitement of the first few moments passed, and I paid more attention to the words coming from the loud speaker. As I listened, a note of excitement crept into the Voice. Excitement, then anger, cold and terrible. And quickly on the heels of that anger came hate, an insane hate that somehow filled me with dread.

Through the balance of the night I listened. Although the words spoken by the Voice were so much meaningless gibberish to me, each passing hour saw me seated there, motionless, held by the power of that strange, high-pitched voice.

A gray pencil of light pierced the gloom; the darkness gave way to the radiance of a new day; and suddenly the Voice—broke. There was a moment of utter silence, and then a shrill shriek of fear and terrible agony. The last notes of the shriek were strangely, horribly muffled! And there followed that dead, unbroken silence——

Outside in the long grass a cricket chirped. The spell was broken. Slowly, I rose upon my trembling limbs; slowly, I raised my hand and brushed the beads of cold perspiration from my forehead. The experience had been so strange, those last moments so terrible! It was with great difficulty that I regained my mental equilibrium.

Questions leaped to my mind. Had I really tuned in on Mars? If I had, what was the nature of the message I had received? What manner of creature had done the broadcasting? And—what had caused that shriek?

Not until four years later did I learn the anwsers to those questions. Four long years during which Millard labored tirelessly on the translation of that message from another world.

Millard? Yes, Phineas J. Millard, antiquarian and archeologist. He, in all probability, is the only man living today who is able to translate a record consisting only of phonetics. And even he required four years for the accomplishment of that task.

Little more remains to be said by way of introduction. For the sake of convenience, I have taken advantage of natural breaks in the action of the narrative and divided it into chapters. Also, I have taken the liberty of substituting the English names of scientific apparatus for the incomprehensible names used by the Voice. Aside from that, the narrative is unchanged. And now you may read this amazing tale as it is related by Tuol Oro, scientist of another planet.

CHAPTER I

IN this vast Universe, teeming with its myriad forms of life, there is surely one race of beings who will hear and understand this, my warning. And understanding, perhaps they may heed. It is with that hope in mind that I am telling my story.

When I began my life upon this planet, I was called Tuol Oro. Through the brilliancy of my intellect, and the power of my mind, I made that name a name that was respected throughout the world. Yet, through the stupidity of one man, and in spite of all I had done, I became an outcast. I was scorned, derided, and openly shunned by those who had respected me. They referred to me as Tuol the Madman, or Tuol the Fool, as it suited their fancy.

Revenge became the one purpose of my life. I lived only that I might destroy the race of fools that ruled over Kotar. And I've done it! Failures were they, who thought themselves perfect; but they are gone. And I, who alone survive, was thought to be the only failure of their civilization. Tuol, the Fool? No, Tuol, the Conqueror, am I.

There are others, now, that have taken the place of man, others that, eventually, I shall also rule. Those others, that I loosed upon the world to do my will, shall feel the power of my might, and I will reign supreme over all Kotar. Soon I will go out and claim that which is rightfully mine; then, indeed, will I be conqueror.

But, before that occurs, I will tell the story of man's downfall and destruction; the story of Tuol Oro's revenge. And that tale heard, perhaps, on some other world, may be a warning, so that men who advance strange and unusual facts may receive audience, and be respected as they deserve.

I remember well those events which were the cause of my banishment. The meeting of the Council; my report about the wonderful discovery I had made; the incredulity of the Council; my taking of that oath——

The Supreme Council, that august body of Searchers-after-the-Truth, had called a meeting of all the scientists upon the planet. Report was to be made as to what had been accomplished for the advancement of civilization in each field of research.

The gigantic hall, the Hall of the Council, was filled to overflowing. Thousands of scientists representing a vast accumulation of knowledge, occupied the countless compartments which made up the hall. They, however, were unimportant; only upon very rare occasions did they learn anything that was of real value.

The really worth-while discoveries of the age had been made by a small, insignificant group of six men who occupied one large compartment at the front of the hall. Six men, the greatest minds in all Kotar. Six men, and I was one of them!

I remember them well; even now I can see, in my mind's eye, those men of knowledge. Each was an expert in his chosen field, the accepted authority on his special branch of science.

There was Bor Akon, the historian. No important occurrence of any past age, no matter how remote, was unknown to him. Then there was Sarig Om, the astronomer, who had plumbed the depths of space with his instruments, and who knew the innermost secrets of innumerable heavenly bodies. Great was his knowledge.

I mention these two particularly because of the important part they play at a later date.

The others in the group are Dees Oeb, specialist in the study of matter; Stol Verta, lover of things mechanical the greatest inventor in Kotar's history; Gano Tor, whose strange concoctions could well nigh bring the dead back to life; and Tuol Oro, delver into the infinitely minute. Truly a remarkable concentration of wisdom. Yet everyone in that group, and all those minor intellectuals were failures. All were blotted out—erased, by the children of my mind, their great intellects rendered helpless. All—save one. I, Tuol, the Mighty, survive! But I digress.

On a platform raised high above our heads sat the Council. Twenty venerable men were they, the ruling body of Kotar. Each one of the Twenty, from the time of his birth, had been trained in just the correct environment, to prepare him for the position he was now

holding. They were the judges, the judicial minds of our planet.

As they, the Council, had been trained, so had we, the scientists, been prepared, with the thought of our future place in life, in mind.

Bor Akon, the historian, said at one time, that in former ages there had been no such specialization, that each man and woman decided his or her field of endeavor upon reaching maturity. Utterly ridiculous! Our destinies were predetermined in our infancy by the Sub-Council of each residential district. In this way there was no neglect of one occupation and over-crowding of another. But to return to the gathering in the Council Hall——

Each individual booth was equipped with an instrument employing the mysterious "Power of the Spheres," that power which I am using in giving broadcast this narrative of warning. It was with this instrument that we, the scientists, not only communicated with the Twenty, but, through the use of a large amplifying disc, made our reports audible to every man in the hall.

The members of the Council, by the way, required no such aid in making their thoughts known; through the combined power of their well trained minds, they could impress upon us their every desire. And, because they had a complete knowledge of who occupied each of those many compartments, they had no difficulty in having the scientists speak in the order that they, the Council, wished.

Suddenly the hall became quiet; every sound was hushed. A mental command for silence had come from the Twenty. And then Stol Verta, the inventor, arose. Speaking in a dreamy monotone, he addressed the Council.

Stol's report had to do with his most recent invention, a machine which he claimed would traverse the great void between the planets. How this was to be accomplished, I do not remember. Indeed, little of what he said made an impression upon my memory. The so-called mechanical marvels of the age held little interest for me; and Stol Verta, himself, is an uninteresting individual at best.

His statements, however, seemed to meet with the approval of the Council, for they sent a thought-wave of praise and commendation broadcast through the hall. Smiling slightly, Stol seated himself.

SARIG OM was the second scientist called upon by the Twenty. As he arose to make his report, I decided to pay more attention than I had before. The science of Sarig Om was of interest to me because of the similarity it bore to my own study. His was the study of largeness unfathomable; mine, of the infinitely minute.

Sarig gave a detailed report about the various occurrences in the heavens before he reached the really important feature of his discourse. At the time I was not impressed with the importance of the statement; later I had reason to recall it.

He spoke of the coming opposition of our world with Santel, our nearest inferior planetary neighbor. He stated that the two planets would be closer to each other than they had been for almost fifty mallahs.* It would be an excellent opportunity, he informed us, for us to take steps toward establishing communication with the Santellians. His report, also, was approved by the Council.

As Sarig seated himself, I felt a curious tingling at the base of my brain. Then a strangely silent voice in my mind bade me rise. It was the command. I rose to my feet; swept the hall with my eyes, and then faced the Twenty. A command came for me to proceed with my report. After a moment's pause. I began.

"To the Supreme Council, the judicial body of Kotar, I, Tuol Oro, delver into the infinitely minute, make report." This was the customary beginning, and each scientist used it, with variations, of course. I continued:

"My labors of the past mallah, Venerable Twenty, have not been fruitless; indeed, it was my great fortune to make a discovery that is unequalled in the history of microscopy.

"The Council is doubtless aware of the construction of the atom and its marked similarity to the solar system, with its central body, the sun, or in the atom, the nucleus, and its revolving satellites—planets or planetary electrons. The conception of the atom, of course is not, or I should say, was not accepted as fact, but was thought to be only a plausible theory.

"Five stallos ago, working on a principle different than any ever used before, I constructed a microscope so powerful that it enabled me to see the component parts of an atom. The planetary electrons, themselves, were invisible because of the great speed with which they revolved; but the protons could clearly be seen as rapidly rotating, faintly glowing spheres.

"Very naturally, I was elated with my invention and discovery; still, I wasn't satisfied. I felt that I had only begun, and that the possibilities brought into being by my discovery were practically limitless. So, without delay, I began constructing a microscope far more powerful and efficient than my first instrument. After four stallos of intense effort, I succeeded.

"This latter instrument surpassed all my expectations; with it I discovered something so amazing and incredible that I had difficulty in believing the testimony of my eyes.

"When the microscope was complete to the last minute detail, I trained the lenses upon a particle of sodium. My heart beat more rapidly as I peered into the eye-piece for the first time. What might be revealed to my gaze? A host of impossible conjectures flashed through my mind, yet not in my wildest imaginings did I conceive of such a sight as met my eyes.

"I was looking into a wide, shallow valley, covered with a brilliant, vari-colored vegetation. For some moments I gazed at it unbelievingly; then the scene was gone, replaced by a rounded hill-top. Like the valley, this, too, was covered with the brilliant colorful plant life. And as I watched, the hill followed in the wake of the valley, moving slowly across the line of my vision. Another valley took the place of the hill, a valley far larger than the first.

"As I gazed at it, I became aware of a peculiar phenomenon that had escaped my notice before. The vegetation in the valley was in motion, was constantly shifting and changing position. I changed the focus of the microscope, concentrating its magnifying power on a small portion of the scene. The valley seemed to leap up toward my eyes. No longer could I see a great field of moving plant life; only three plants were now within the range of my vision.

*We have no possible way of determining what the Kotarian words for periods of time would mean in English. From the action of the narrative, however, we can be fairly certain that the Mallah is equivalent to our year, the Stallo, to our month, the Stal, to our week, and the Tron to our minute. Tuol does not mention anything equal to our day, hour, or second, although it is probable that other time divisions than the former ones exist.
—L. A. E.

"And what strange growths they were! Nothing like them ever existed on Kotar. In form, and size they were alike, though each was of a different color. When I first saw them, they were small, almost perfect spheres covered with a shiny, scaly skin. As I watched them, they grew larger; indeed, their growth was so rapid that I could actually see it! As they grew, their skins became tighter and tighter, and suddenly they burst, scattering great clouds of brightly colored dust through the air. Much of the dust was blown away, but some of it settled to the ground. Where the spheres had been, were now three pools of slime; it was into this that the dust fell.

"That which followed was perhaps the most amazing thing that I saw during all my observations. Briefly, this is what occurred: the dust, evidently the plants' seeds, upon falling into the slime, sprouted, grew, and reached maturity, and a moment later, burst in turn, casting forth their seeds—all this with such rapidity that it seemed to be one continuous movement.

"In my interest in the valley and its life, I had forgotten the strangeness of the conditions under which I was viewing the land. Deciding to discover the location of this world, I began slowly decreasing the magnifying power of the microscope, focusing the instrument in such manner as to move the world further and further away. Again I saw the panoramic view of the valley and mountains. Then the scene assumed a peculiarly convex appearance. This convexity increased until, finally, all details of the view were lost, and the microscope revealed a huge globe turning slowly on its axis. As this decreased in size, and other globes made their appearance, the truth dawned upon me. I had discovered life on a proton of the nucleus of an atom of sodium!"

THUS did I end my report to the Council.

After I had finished, I remained standing, awaiting the commendation of the Twenty. But their approval was never given. Instead, two things occurred which were unprecedented in the history of Kotar. Never had one of the Twenty spoken while the Council was in session; and never had one of the six Masters been publicly condemned by the Twenty. Both occurred then.

San Nober, Head of the Council, arose, an expression of stern disapproval on his face. Then he spoke, uttering the words that spelled doom for Kotar's ruling race.

"Men of Knowledge," he said, "never in all the history of the Council have we had to deal with a problem like the present one. Always have our members spoken truth. But that is no longer so. You, Tuol Oro," addressing me, "have broken all precedence. You have lied! Your report was naught but a series of falsehoods. Your statements are preposterous, ridiculous; nothing of truth is in them.

"We are taught that it is impossible for a normal individual to lie. Obviously, then, you are insane. Even though insanity is almost an unknown malady at present, you are mad. Were it not for the records of your great discoveries in the past, you would be put to death. Because of them, you shall live. But you will be an outcast from society. You may mingle with your fellows, but they will know of your infirmity. For your lies or insanity, whichever it may be, you will be an object of pity and an outcast.

"And now you must go; the Hall of the Council shall know you no more."

While San Nober was speaking, I stood like one stunned. His disapproval and condemnation were so unexpected and so unjust that I could not believe that I had heard aright. Lies! A series of falsehoods! Insane! Mad! By Sklow, mad was I? Fool and son of a fool! An object of pity, eh? An outcast! Suddenly something seemed to snap within my brain, and a red haze came before my eyes. Then all the hatred and rebellion in my being sought outlet.

What I said then, I do not know. Perhaps I acted like a man deprived of his sanity. But I was justified. Condemned, cast out, called a liar and a madman, without an opportunity to prove the truth of my statements! One thing that I said, though, I do remember. That was the oath I took ere leaving the Council Hall.

"By Sklow, by Taw, by Maca, by all the gods that ever lived, I swear that every vestige of this civilization shall be removed; that all men save Tuol Oro shall be destroyed! I swear it and it shall be so!"

Aye, and it is so! I have destroyed them all. They deserved it, every one of them. Oh, how I hate them, even though they are gone! I hate, loathe, despise them—

After taking that oath of vengeance, I left the Council Hall, followed by thousands of pairs of pitying or derisive eyes. I walked to my boat moored in the Great Waterway, seething with anger. Even then plans for revenge were forming in my mind. By the time I reached my home in the twenty-seventh division of the ninth Minor Waterway, I had decided on a definite plan. It was this plan, conceived on my homeward journey, that brought about the destruction of a world.

CHAPTER II

WITH as little delay as possible, I began making preparations for the carrying out of my plans, for I knew that many stallos of research would go by ere I accomplished that which I purposed doing. Indeed, the goal I had set before me seemed to be beyond the reach of human ability. I desired to increase the size of those inconceivably minute plants on the diminutive world I had discovered, until I could take them from their protonic birthplace and bring them to the surface of Kotar. With them I intended gaining my revenge.

The first two stallos of effort were fruitless. Often, during that time, I was tempted to abandon my apparently impossible project, and might have done so, had I not been spurred on by my desire for vengeance. However, I continued, and at the beginning of the third stallo I saw the first sign of reward for my tireless efforts.

From the very first, I had had one basic idea on which to work. That was this: since every particle of matter, regardless of its size, could, theoretically, at least, be divided in half forever, it certainly must be possible to reverse the process, and double the size of any particle, even of an electron or proton. Pursuing this line of reasoning, it naturally followed that eventually I would have increased the size of my proton to such an extent as to make it visible to the naked eye, and even larger. The difficulty lay in the actual accomplishment of that enlarging process. Two stallos were spent in vain conjecturing and theorizing along this line.

At the beginning of the third stallo I decided to begin working with the electrons and protons themselves. Taking a portion of chemically pure sodium from the

supply I possessed, I placed a minute quantity beneath the lenses of my ultra-microscope. Then I focused the instrument so as to enable me to view the entire atom. Similar to my first observations of the sodium containing the life supporting proton, I now saw twenty-two small, dully glowing protons, and eleven, almost transparent nuclear electrons in a compact group, each rapidly rotating on its axis. About them, at various distances, revolved what seemed to be a tangled maze of gleaming cords. These, I knew, were the glowing paths of the planetary electrons, which moved at such great speed as to be invisible. As long as the atom remained in that condition, I knew that I could do nothing with it.

Consequently, I decided that, in some way, I'd have to decrease the speed of the electrons' rotation until I could observe each one individually. With this purpose in mind, I began a series of experiments. All that I did, by the way, had to be done beneath the lenses of my microscope. Thus handicapped, it seemed that I had a difficult task before me. I was aided materially, however, by a device recently invented by Stol Verta. This machine, far too complex to explain, enabled its user to focus a beam of inconceivable cold or intense heat upon a microscopically fine point. Because of an idea I had in mind, I was certain that Stol's invention would be of great value.

And so it proved to be. Use of the device revealed that heat increased the speed of the electrons, widening their orbits, and causing some of them to whirl outside the field of the microscope. Cold, on the contrary, caused the speed of the electrons' rotation to diminish. The lower the degree of heat, in simpler phrase, the more intense the cold, the slower became the motion, until at absolute zero, both protons and electrons were devoid of all movement. I had taken one big step toward my goal.

Without loss of time, I continued my research, following out a theory that had come to my mind during my first experiments. For this idea I had gone back to the time of my early training when I had been taught the rudiments of elementary chemistry. My theory involved the lack of symmetry of some atoms, sodium among them, and the mechanism of chemical action.

An atom of sodium, I had been taught, has eleven electrons, negatively charged, revolving in orbits around the nucleus. One of these electrons revolves in an orbit with a much larger axis than those of the other electrons. Because of this, it is not held very firmly by the nucleus. Further, the lack of symmetry in the atom creates unbalanced forces. Consequently, the sodium atom will have a tendency to lose this electron during the collision with other atoms, and leave the atom more symmetrical and balanced. To summarize, atoms having one or more electrons beyond what corresponds to symmetrical forms, have a tendency to give off those electrons.

Similarly, I had learned that some atoms require one or more electrons to complete a symmetrical structure. The chlorine atom is an atom of this type. It has seventeen electrons, needing only one more to make the balanced, symmetrical structure of eighteen electrons.

Consequently, when an atom of sodium is brought in contact with an atom of chlorine, the transfer of an electron from one atom to the other takes place. Both atoms pay for their newly found symmetry with the loss of neutrality. The removal of one negatively charged electron from the sodium atom leaves it with an excess of one unit of positive charge. The addition of the electron to the chlorine atom gives the latter an excess of one unit of negative charge. The two, then, being oppositively charged, join and form sodium chloride.

But sodium chloride held no interest for me; the laws of chemistry involved, alone concerned me. With these recollections of the mechanism of chemical action in mind, I felt that I had something definite with which to work.

BEFORE I could begin carrying out my idea, however, I decided that I'd have to leave the privacy of my residence and mingle with the race I despised, long enough to secure the chlorine for my experiment. Immediately upon arriving at this conclusion, I ventured out into the street. If I had needed any additional stimulus to spur me on, I received it in the covert sneers and thinly veiled contempt which greeted me. I returned to my home a short time after securing the chlorine, in the grip of a rekindled anger.

Fully prepared, then, I set to work. First I placed a minute particle of sodium beneath the ultra-microscope's lenses, focusing them so that, as on former occasions, I could see the separate units of a complete atom. Then I put the cold projector in position, in order to be able to stop the atomic action whenever I wanted to. And finally, I liberated some of the chlorine, doing it in such a way that it completely covered the sodium. Then, through the eyepiece of the microscope I watched the atom, waiting for the change that would take place when chemical action began.

At first glance I could detect no difference, but as I watched I saw the electron which was outside the symmetrical structure of the atom, slow down perceptibly and leave its orbit, disappearing entirely. While the atom was in this condition, deprived of one electron, I directed a beam of intense cold upon the sodium and stopped all atomic action, thus preventing the sodium from joining the chlorine. I now had a free atom of sodium with an excess of one positive charge, or one proton more than it could possibly have had in nature. I had taken a second step toward my goal.

It was with a feeling of trepidation that I approached the third part of my task; the success or failure of this phase of the experiment would decide the result of the entire project.

Leaving the sodium and microscope out of my thoughts for the moment, I gave detailed consideration to a recent discovery of Dees Oeb. This was a new ray, the ray of the fifty-fourth octave of the electro-magnetic spectrum. This ray had a peculiar property: it caused anything upon which it was directed to increase in size. How it did this, I do not know, but the fact of its doing so remains. I proposed directing this ray upon the surplus proton in the atom beneath the microscope and increasing its size until it left the atom behind.

A short period of time spent in experimenting with a second cold projector that I possessed enabled me to adapt it to the growth ray. I was prepared to continue.

Returning to the microscope, I peered through the eyepiece, and singled out one of the protons more centrally located than the others. Focusing the projector, I directed a beam of growth ray upon that proton.

There was an immediate change in the appearance of the sphere. Its size increased perceptibly. In a short

time it began crowding the other atomic bodies, moving them from their customary positions. As the proton grew in size, it became less solid, even nebulous, until, finally, when there seemed to be no more room for it to occupy, there was a sudden flash—and the atom had disappeared. In its place was a small, dully-glowing sphere, no longer nebulous in appearance, but as solid as it had ever been before. The proton had grown until it had encompassed the entire atom.

I allowed that growth to continue until the sodium had been surrounded by the sphere, now, a comparative giant. While this went on, by the way, it was necessary for me to change the focus of the microscope repeatedly, in order to watch the proton's increase in size.

Up to this time, I had had the cold directed upon the sodium to prevent it from uniting with the chlorine. This was no longer necessary, as there was no further possibility of that union taking place. So, after removing most of the chlorine, I shut off the beam of absolute zero.

I had then, as the result of my endeavors, a small, almost perfect sphere, barely visible to the naked eye. My goal was in sight! I needed only to duplicate my experiment, using the proton supporting the plant life, and vengeance would be within my reach.

Accordingly, I took from its place of safety the sodium containing the protonic world, and treated it as I had the other, centering my attention, of course, upon the proton inhabited by the rapidly moving, strangely formed vegetation. After I had increased the size of the minute sphere until it had taken up nearly all of the sodium, the thought occurred to me that I had neglected to provide a place in which to put the enlarged proton while I strove to secure some of the seed dust from it. In a moment I had turned off the growth ray, directed the cold upon the sodium and left it to its own devices.

I HAD little difficulty in constructing the apparatus to hold the sphere; in a short time it was completed. It was a simple device, consisting of two tall metal uprights upon whose grooved tops rested a strong, heavy metal bar. This bar or rod turned slowly when power was applied to the small motor with which it was connected by a series of cogwheels and chains. After the machine was complete, I returned to the microscope and enlarging process.

As the proton grew and consumed the sodium of which it was a part, I added more and more of the element, until it had reached a size where there was no further need of the microscope. Taking it from beneath the instrument, I increased its size, without adding sodium to it, until it was a large, wraith-like bubble. Then, taking the cross-bar from the machine I had prepared, I thrust it through the center of the sphere. There was a flash—and the former proton had a metal axis on which to revolve. After returning the rod to its place in the device, I added sodium to the sphere until it had again become solid. I continued the enlarging as long as space remained on the rod, then stopped.

I had taken the third step toward my goal.

I had in my laboratory at that time, a great, box-like room, the walls, floor and ceiling of which were glass. A number of stallos before, I had had it built with the intention of using it as a storage room for numerous bacteria and germ cultures which I had intended studying. Through my interest in my new ultra-microscope, the room had not been used. I was glad of it. Because of the danger involved in the next part of my project, I decided to make use of that room, inasmuch as I could hermetically seal it if that became necessary.

After removing the few articles that had somehow found their way into the big glass box, I covered the floor with a heavy layer of soil. Then, placing rollers beneath the device which held the giant proton, I moved the machine into the room. Directly opposite the sphere I placed a projector with which to throw a fan-shaped flood of cold upon it, and beside it, the growth apparatus. After focusing the growth ray projector so that only a small part of the proton's surface would be affected, I applied power to both machines, as well as to the apparatus holding the proton, and hastily left the room, closing and locking the door behind me.

Looking through the glass wall, I saw that the action of the growth ray must have been instantaneous. Eight different-colored, flesh-like plants were rising from the proton. They were ugly, shapeless masses of cells whose very existence was unnatural. While I watched, they grew from small, insignificant organisms to great, repulsive vegetable monstrosities. As they grew, their skins became increasingly tighter, until, when they had reached the size of the world from which they sprang, they burst, casting their seed dust to all parts of the room.

The dust, as it settled grew in turn, with the result that in a short time, the floor of the room was covered with an ever increasing mass of slime in which grew a repulsive, waving, constantly changing heap of plants. At frequent intervals, the growth ray added other plants, vari-colored and strangely formed, to those upon the floor.

Every metal device in the room became covered with a misty, gray film. The glass walls grew clouded, rendering my view of the room's contents blurred and indistinct. When the seed dust settled upon this film, it took root and grew. In a very few moments, the machines had become grotesque, vegetable caricatures of their former selves.

The plants continued their growth, one layer of either growing or decaying organisms upon another, until the mass had reached a depth of one quarter the height of a man; then my view of the room's interior was shut off. I had no means of determining how long that growth continued, but that was of little consequence.

Another thing remained for me to do before I liberated my servants upon the world to do my bidding. I had yet to learn just what would control the monstrous plants, and what steps I would have to take for my own protection.

In this I encountered no difficulty; the application of heat that was just beyond the limits of human endurance caused the growths to shrivel up, and fall, shrunken, shapeless masses, into the fetid slime beneath them. When the heat was directed against the glass, by the way, that slime began to steam, and a foul, nauseating odor in some way escaped from the glass cube. Heat, then, I decided, was obviously the agency with which to destroy them.

And heat, I felt sure, would protect me from the plants. I'd have men build numerous wide-mouthed nozzles, and have them placed at carefully selected positions on the walls and roof of the outside of my home. Steam pipes connected with these mozzles would cover the building with a protective blanket of heat.

Because of this one rather large remaining task, and several minor ones, and the time necessary for their accomplishment, I decided that I had better conceal the room from the prying eyes of inquisitive neighbors or chance callers, until I was ready to make use of its contents. I had just arrived at this conclusion, when a persistent buzzing in the vicinity of the door told of visitors seeking entrance. Turning to a small screen in the corner of the laboratory, I saw thereon the familiar faces of Bor Akon and Sarig Om.

As I moved toward the door to let them in, I realized in a flash that their coming was a gift of Sklow. They were welcome—how very welcome, they'd never know. I opened the door and bade them enter.

CHAPTER III

WHEN the two faced me in the reception room, I could see in their glances the uncertainty they felt. They were in doubt as to the treatment they would receive at my hands. I smiled at them reassuringly, for it did not suit my purpose to arouse distrust in their minds.

The smile evidently renewed their confidence, for Bor Akon, acting as spokesman, cleared his throat and addressed me.

"Brother Tuol," he began—we were all brothers in conversation, "Sarig and I have taken it upon ourselves to investigate your report to the Council. We believe that you have been treated unjustly. Unquestionably, you were either sick or laboring under some great mental weight when you made those ridiculous statements in the Council Hall.

"We, Sarig and I, thought that we'd attempt to persuade you to take steps toward regaining your former position in the scientific world."

So that was their attitude! Perhaps I was sick, or temporarily deranged! Well, I thought, it wouldn't take me long to correct that erroneous idea. Repressing my natural anger, lest it be betrayed through my voice, I replied in studiously careless tones.

"Brother Bor, I assure you that you are mistaken. All that I said to the Twenty was absolutely true. I can't help feeling that I have been shabbily treated. Had I been given a fair opportunity, I would have been able to prove my claims so absolutely, that even the most skeptical would have been convinced. As for my trying to regain my former position, no! They have made me an outcast; I am satisfied.

"Now that you are here, I'll show you that proof, the microscope itself. If you will excuse me—" They acquiesced, politely, and I left them seated there while I headed toward the laboratory.

Upon arriving there, I drew a large curtain around the glass room, in order to conceal it from my visitors' eyes. Then I returned to the reception room and led my guests back to that part of the laboratory which held the microscope.

As their eyes fell upon the intricate mechanism, with its multitude of lenses and powerful lights, they displayed a reluctant, though rather skeptical interest. Sarig Om turned to me with a question in his eyes. I answered his unspoken query with:

"There would be no use in explaining its construction or means of magnification to you, inasmuch as neither of you could possibly understand. However, there is nothing to prevent you from observing the wonders that may be seen through it. Which of you will be the first to gaze upon an electron?"

As I placed a particle of matter beneath the lenses, and focused the microscope, Sarig Om expressed his willingness to be first. "I've been looking through lenses all my adult life," he said, "and since one of us must be first, it may as well be I."

While the two alternately gazed through the microscope, crying out in wonder at each new marvel, I excused myself and left the room.

I returned, some moments later, with some articles of food that I had treated with a sleep-inducing drug. As I entered, Sarig Om looked up, an expression of incredulity on his face.

"Brother Tuol," he exclaimed, "we have discovered life on a proton! It's unbelievable!"

"Come, come," I replied. "You've no cause for such great excitement. I have something far more amazing than that to show you. After we have eaten this food, I'll let you see something that is really astounding."

AT my invitation, then, my guests seated themselves, and with poorly concealed impatience, ate the food I placed before them. A few moments after they had swallowed the drugged morsels, I saw their eyelids droop. Valiantly they fought the drowsiness that had settled upon them, but the drug was stronger than they and in a moment more they slept.

Securing strong cords, I bound them tightly, and carried them into the room which held the glass box. I placed them against the wall of the room in such a position as to enable them to have an unobstructed view of one of the box's sides, when they awakened.

I waited impatiently for the two scientists to recover from their involuntary slumbers; I was anxious to carry out the experiment I had in mind. At last they stirred, and in a short time were fully conscious.

Any self-possession that they had had, had gone from them. They looked at me with fear-filled eyes. In all probability, they thought they were at the mercy of a madman. While I stood there, waiting for any remaining effects of the drug to pass, Bor Akon, in an obvious attempt to bolster up his own courage, and perhaps intimidate me, addressed me.

"Tuol, you madman," he exclaimed, "cut these bonds and set us free immediately, or I'll see that you receive the punishment you deserve. You fool! What can you expect to gain by this? And what possible purpose can you have in mind, anyway? Liberate us now, or I'll inform the Council of your insane actions!"

I laughed. I couldn't help it; it was funny. The thought of that brainless fool, bound and helpless as he was, threatening me, bordered on the ridiculous. But my mirth was short-lived; suddenly it turned to anger. These two men were part of the race that had made me an outcast. A fool and a madman, was I?

"Silence!" I roared, as Sarig Om opened his mouth to speak. "Who are you to threaten me? Inform the Council, indeed! Idiots! You'll do just as I bid, and that only.

"What do I expect to gain; what purpose do I have in mind? I'll tell you. When the Council banished me, I swore that I would destroy every vestige of this race of failures, the race of man. I now have the instrument with which to bring about that destruction. For three long stallos I labored tirelessly, striving to achieve the impossible, and I've succeeded!"

While talking, I had moved over toward the glass room. I reached up, then, and pulled the curtains aside. Nothing could be seen through the glass, save a grayish-white film on its inside surface, and a vague suggestion of a ceaseless movement within.

"In that glass cube," I continued, "lies the result of my efforts. You remember, of course, that I told the Council about the rapidly growing plant life I had discovered on a proton. Within that room is the proton itself, enormously increased in size. And with it, surrounding it, and I suppose, destroying it, are innumerable plants growing with an insane speed. Plants, they are, that I took from the proton's surface. They grow and grow, one upon another, finding root on any surface. I'll show you how they grow; its only proper that you know, for you, too, Bor and Sarig, have a part in my plan. It is because of that part which you are to play, that I have bound you."

After testing their bonds, and finding them secure, I turned my back upon the two, closing my ears to their pleas for freedom, and directed a beam of heat upon the door of the glass room. Rapidly the film and the plants growing on the door disappeared, sinking to the floor. Further and further into the noisome, steaming mass the heat cut its way, clearing an ever increasing space. Finally, when I had reduced about half of the room's contents to slime, I shut off the heat ray, and admonished the two to pay particular attention.

The plants recovered from the effects of the heat with great rapidity. In a few moments, a red, triangular head on a long, slender stem, thrust itself up from the mass, and burst, casting its seed dust into the air. The astonished eyes of Bor Akon and Sarig Om saw the dust settle into the slime, spring up, grow to maturity, burst in turn, and die, all in a few moments of time. It was not long before the walls had again assumed their white, translucent covering, and our view was again cut off.

A heavy silence followed this, to them, amazing spectacle. Impatiently I broke that silence.

"Well, how did you enjoy the entertainment?" I asked.

"Interesting, wasn't it? There is something still more interesting to follow, but I'll be the only one to see that.

"But consider those plants. Imagine what will happen when I free my pets upon Kotar. Imagine the effects of a little cloud of seed dust settling upon the floor of a boat in one of the great waterways. Curious people gather around, attracted by the peculiar growths. In a moment they are enveloped by a cloud of dust that touches them, and grows, drawing life from their flesh. Imagine a man breathing some of that dust!

"Then picture a strong wind blowing the dust to all parts of the world. News of the menace will cause men to flee. Some will lose their lives in the panic that will ensue. Others, seeking to escape, will perhaps hide in deep pits or cellars. The plants will fill the cracks and crevices of their sanctuaries, and eventually they will die of suffocation.

"Visualize the world after the menace has been at work for a stal. By that time the solid portion of Kotar's surface will have become a flowing, ever changing mass of plant life. The air will be filled with dense clouds of seed-dust of every possible hue. The boats on the waterways will be covered by the plants. Drifting, those boats will force their way through a heavy, viscous scum which will probably cover the water. Plants may be growing in that scum, which, by the way, will be the residue resulting from the decay of the other plants on the shore. Not a sound will break the death-like silence; there will be no more idle chattering coming from the lips of fools. The world will have been cleansed of their presence; all will have been destroyed. All—save one, Tuol Oro. A pretty picture, aye?"

THROUGHOUT this rather lengthy recital, both scientists remained motionless, as though frozen, an expression of growing horror and fascination on the face of each. When I ceased talking, Sarig Om attempted to speak, but the words died in his throat; he was dumb with fear. Bor Akon continued to stare fixedly into my face.

Suddenly a thought occurred to me.

"By the way," I exclaimed, "I told you that you, too, have a part in my plans. I've neglected to tell you what that part is, so I'll tell you now. I am not quite certain that those plants will act in just the way that I desire. Perhaps my efforts have been wasted. To avoid taking any chances of my plans going awry, I intend putting you in the glass room, and watching the effects of the plants upon you."

The semi-stupor into which the two had fallen fell from them like a cloak. Scream after scream burst from Bor Akon's lips. Roughly I clapped my hand over his mouth, threatening to gag him if he started screaming again. When I withdrew my hand, he began mumbling and sobbing piteously. His mind had snapped. Fear had dethroned his reason.

Sarig Om was made of sterner stuff. He cursed me in the name of every god that I knew of, and called me everything vile that entered his mind. I was surprised at his fluency.

When his tirade ceased, I picked him up and carried him, squirming and twisting, over to the glass cube. Depositing him on the floor beside the door, I directed the heat against the glass another time. After burning away about half of the plants I opened the door and thrust Sarig in. Hastily, then, I closed and locked it, and directed the heat all around the edge of the door, in order to destroy any seed dust that might have escaped.

Then I turned my attention to the figure in the room. Sarig, seated in a pool of slime, was straining with all his strength at the cords that bound his hands. Suddenly as one of the plants burst above him, he made a supreme effort, and the cords broke.

Slowly the dust settled upon him. As it touched his skin, sending tiny rootlets through the pores, into his flesh, and drawing life from his living body, he gave utterance to one piercing shriek.

Strangely formed plants sprang from all parts of Sarig Om's body then. With mad, frenzied haste, the scientist tore them from him, leaving ugly, bloody wounds where the growths had been. But only for a moment was he able to struggle with his vegetable destroyers; several plants, having reached maturity upon him, burst simultaneously, enveloping him in a thick cloud of dust.

He seemed to grow larger before my eyes. Countless plants grew upon him, swelling him to three times his normal size. Grew—and decayed. The figure remained thus for only a moment, then it collapsed and lost itself in the slime and plants upon the floor.

For a fleeting second my resolution to destroy the race was shaken—but only for a second. Although the weapon I possessed was terrible, and the death it meted

out, horrible, it wasn't too severe for the fools that ruled over Kotar. They deserved to be obliterated, and I was using the only means of destruction at my command.

I turned to Bor Akon. When last I had noticed him, he had been sobbing and quivering like a frightened infant. Now, he was lying on the floor, unconscious. The sight of Sarig Om's death had been too much for his weakened mind; he had fainted.

I would have spared Bor, then, to wait and be destroyed with his fellows, had it not been for the fact that he was aware of my plans. As it was, he knew too much for my safety; he had to be removed.

Again I burned the plants away; then I thrust the unconscious scientist through the doorway. After all, he was more fortunate than the others, for his death was painless; he never recovered consciousness.

I destroyed all evidence that pointed to the fact that the two had visited me. I took no chances of being implicated if their disappearance was investigated. Any interference at this time would have been fatal to my plans.

But there was no investigation; in all probability, Sarig and Bor had kept their visit secret, for fear of arousing the displeasure of the Council. After about a stal of waiting, I decided that it was safe for me to follow out the rest of my program. I had yet to prepare for my defense, secure a machine to purify the air, and lay in a supply of food tablets, and I would be ready.

Without delay, then, I employed men to make the large, fan-shaped steam nozzles, and fasten them where I directed on the walls and roof of my home. Other men I engaged to cover the building with a network of pipes to carry the steam to the nozzles. This latter crew built the tank that was to form the steam. The water for this, by the way, came through underground pipes from the waterway that flowed before my home. Still others, I hired to fill up every crack and crevice that they could find in the building. In every possible way, I fortified myself against any attacks that the plants might make upon me.

When authorities of the city questioned me about the pipes and nozzles, I told them that they were part of a new device for protection against fire. They believed me, thinking, in all probability, that it was only a fancy of my "disordered" mind. They left me to myself after that; I was glad of it.

During the few trons that preceded the time of my destruction of mankind, I had the oxygen machine installed and operating, and had food tablets enough stored in my bins to last me the rest of my life, if necessary. Likewise, I purchased enough fuel to keep my furnace going full blast for ten mallahs, at the very least.

When darkness fell upon the old, unchanged world of man for the last time, and I retired, I enjoyed the first real rest that had been mine since my banishment. No disturbing spectre of hate or vengeance marred my slumbers, for on the morrow my ultimate goal would be reached.

CHAPTER IV

THE six Masters of Science had privileges that were not given to any other individuals on Kotar. One of these was the right to employ the Power of the Spheres in broadcasting on any wavelength we desired. That is, we could command any broadcast station to terminate its program and leave the air, so that we could use its wavelength. Through negligence on the part of the Council, this privilege had not been taken from me.

Shortly after I awakened from my sleep, greatly refreshed, by the way, I made use of that privilege, commanding the International News to cease broadcasting. After the announcer had stated that his station was cutting short its program at the command of one of the Masters, and that the program would continue after the Master had finished talking, his station grew silent.

I closed the switch, then, and addressed my unseen audience.

"People of Kotar," I said, "I, Tuol Oro, outcast Master of Science, am taking this opportunity to tell you, in these few moments that will be spared to me ere the Council interferes, some facts about my banishment that have been carefully concealed by those in authority.

"Have you been informed that I was condemned without a trial? That I was given no opportunity to prove my claims? That, just because San Nober could not see the truth of my report, I was called mad, and that, without test being given to my mind? Of course you haven't! All that has been kept secret.

"Immediately after the ringing of the Terai bell, I will prove to those who gather before my home that all that I said in the Council Hall was true, and that San Nober himself should be the one to be condemned, because of his total lack of judgment. If that incompetent individual is listening, I give him a special invitation to be there. He—" There was a sharp, sudden explosion and a blinding flash in the broadcasting apparatus, and my connections with the outside world were broken.

I heard words issuing from the receiving device in another corner of the room. It was San Nober, using the so-called Universal wavelength of the Council, the wavelength that covered every station from the lowest to the highest, thus rendering the speaker's voice audible to every listener on the planet. San's heavy, bass voice quivered with anger.

"Tuol Oro," he growled, "you are a fool. And for your folly you shall die. You will be permitted to offer any proof that you possess, at the time you have set, so that no one may say that there has been a miscarriage of justice.

"I accept your invitation: I'll be there."

With a feeling of satisfaction, I shut off the machine. San Nober would be there! That was what I wanted. What mattered it that he would probably be accompanied by a group of his followers, whose purpose it would be to arrest me? They would be powerless to harm me, for I possessed a weapon more terrible than anything they had ever conceived of.

I occupied myself during the time that I had to wait, with a final survey of all my protective devices. I made sure that everything was in readiness for the great climax. Only the turn of a valve was needed to cover my home with a blanket of steam. A little pressure upon a button would start the oxygen machine. An automatic feeding device would add fuel to that in the furnace whenever it was needed. As far as I could see, there was nothing else to be done along the line of self-protection.

There was one thing, though, that I had not taken into consideration. How was I to free the plants without endangering myself? After some thought I decided upon a method. In a short time I constructed a small,

glass box with a tightly fitting lid, which automatically closed at any time I signified on the time-clock within the box.

I burned the plants away again, and set the finished box inside the glass room with the lid timed to close in three trons. Impatiently I waited for the time to go by, dividing my attention between the plants and the clock on a nearby wall.

At last, when the three trons had passed, I managed, by careful application of the heat, to remove the box from the room, filled with plants, seed dust, and slime.

With great care, then, I went over all the space on which seed dust might have found lodgment, with a beam of heat. After I was certain that there was no further possibility of any dust having escaped destruction, I carried the glass box to a window overlooking the Waterway, and there took up my vigil. The time for revenge was almost at hand.

The street below me was filled with a noisy throng of people. Men, women, and children had gathered, for a public statement by one of the Six Masters was far from being commonplace, and was worthy of more than passing notice. Several men in the crowd I recognized as minor scientists who had been in the Council Hall on the day I was banished.

The Waterway was even more crowded than the street. Indeed, the boats were so close to each other that very little water could be seen. And every boat was loaded to capacity with passengers.

Overhead I could hear the low, steady hum of many flying machines. Looking up, I saw small, one-man planes darting here and there, aimlessly. Great helicopters with whirling propellers and whirring wings were suspended above, hanging stationary in mid-air. All were low enough for their passengers to hear anything I had to say.

SUDDENLY my attention was drawn from the air vehicles by a commotion below. I looked down. In some way, how, I do not know, the boats had been cleared away to form a lane which led directly to the front of my home. At the further end of the lane, I saw the graceful lines of San Nober's stately bark. Its silver trimmings flashed in the sunlight.

As it drew closer, enabling me to distinguish faces, I saw that every member of the Council was there, and that the remaining three Masters were likewise on board. In addition, the International Peace Guard had six representatives present. They, I knew, were there for the purpose of arresting me after I had had my say. But they meant nothing to me.

As the Council boat touched the side of the waterway's banks, I heard a single, deep toned bell note, the Terai bell. The time I had set had come! I flung open the window.

At my appearance, the voice of the throng was stilled. The sound of motors in the air above became less noticeable, as the pilots applied their silencers. And then I spoke.

I described in detail all that had taken place in the Council Hall. I told them of the great discovery I had made, laying stress on the minute plants and their amazingly rapid growth. I spoke of my banishment, and of the oath I had taken—and there I stopped. The bellowing voice of San Nober had interrupted me.

"Have done with this nonsense!" he exclaimed. "This farce must stop! How can your grievances affect these people? You can't expect to gain anything by this additional publicity. You must be mad to expect any benefit to come to you from this.

"If you have any proof to offer, produce it. Stol Verta will begin counting, and if you haven't partially proven your claims by the time he reaches fifty, your liberty will end. You will not be given another opportunity to deceive your fellow men."

"Begin counting, Stol."

While the inventor's hand slowly, mechanically rose and fell, I gave my last message to the world.

"People of Kotar," I said solemnly, "your span of life is almost ended. When San interrupted me, I was about to tell you that the world is doomed, that my oath will be carried out. You are a race of fools, unworthy of the responsibility that has been given you. You are not fitted for the task of controlling a planet's life, so you cannot survive. You——"

I went no further. No one would have heard me if I had. The momentary daze which had held the crowd speechless, vanished. Hoots and jeers, and cries of mingled anger and mirth came from the throng.

Stol Verta stopped counting. San Nober, with a word to his colleagues, stepped from his boat, and, followed by the Guards and Masters, began forcing his way through the crowd. A path opened as though by magic, and the throng grew quiet.

I took advantage of that silence; raising the glass box high above my head, I cried, "This is my proof," and hurled it at the feet of San Nober. Then I banged the window shut, locked it, and turned the valve which started the steam.

San fell back, startled, when the box crashed before him. Then he stared in fascination at the little heap of shattered glass and pulpy matter that lay at his feet. It was growing, and he could see the growth! He leaned forward to observe the strange organisms more carefully —and a plant burst.

A small cloud of dust arose into the air and settled upon San's head and shoulders. For a moment he beat at the vegetation that sprang from his flesh, his arms waving futilely, helplessly; then he fell to the pavement.

Those who saw his death, shrank back, while those further away strove to get closer. But when the seed dust began dropping upon them, only one impulse actuated them, and that was to escape.

Escape, however, was impossible, now; they had delayed too long. Where one plant had been, had grown a thousand; the thousand had become a million; and every moment more and more seed dust was being cast into the air. In little more time than is required for the telling, no human life was left where the crowd had been.

At the very beginning of the destruction, there had been wrecks on the Waterway, caused by boats crashing into each other when their pilots had become heaps of plants and slime. Similarly, there had been accidents in the air, planes darting around erratically, pilotless, with propellers clogged by slime and plants, either crashing into each other, or falling to the ground. But that was all over in a short time.

Some planes and boats had made good their escape, and had wasted no time, I was sure, but rather made haste to tell the world of the horror that menaced civilization. This caused me no concern, however, for I knew that the plants were too firmly established to be af-

fected by anything the puny world of man might do. Kotar's ruling race was unquestionably doomed.

Soon after the last man in sight had been destroyed, and the last plane had disappeared, I turned away from the window. I had taken my revenge; I was satisfied. I had seen San Nober die a horrible death. Before my eyes the members of the Council had been destroyed. And I was the only survivor of the six Masters of Science; they had scorned me, but they had felt the might of my hand.

While walking across the room with the intention of starting the oxygen machine, I spied the broadcasting apparatus. A thought occurred to me. Why not tell the Universe of the things I had done? Why not warn them, so that they, if ever similar circumstances arose, would not make the mistake that the people of Kotar had made. I had one of the most powerful broadcasting machines on Kotar, and it would be a simple matter to increase that power so that my message would travel to the farthest corner of the Universe. I made a decision: I'd tell the story.

And then I remembered Sarig Om's report to the Council. He had said that Santel would be closer to Kotar on a certain date than it had been for many mallahs. If there were intelligent, reasoning beings on Santel—Sarig had always maintained that there were —they, at least, might be able to hear my warning. At any rate, I decided to wait for that date and broadcast my story then.

I spent the interim between the time I made my decision, and the time of opposition, in studying the plants I could see from my window, enjoying long periods of interesting observation, in spite of the steam that persisted in cutting off my view. I also spent some time in preparing notes for my story, for I wanted nothing to be left from the narrative.

Finally, after stalls of waiting, the time of opposition has arrived. Now, as I am talking, Santel should be at its closest proximity to Kotar.

My story is almost ended. From my place here before the broadcasting apparatus, I can look out through the window. A vast sea of amazingly brilliant plants meets my eye. There are plants that are thick and round, plants tall and angular, plants of every conceivable shape and color. It is a scene of dazzling brilliancy, a scene that has an unnatural, alien beauty. And the impossible speed of the plants' development does much toward creating that sense of the unreal, the fantastic.

There is no strife or discord, no petty quarrelling; the plants seem to be the embodiment of unity. A vast, all-engulfing silence has superseded the noise and bustle of man's civilization. The only sound that breaks the silence is the hiss of escaping steam. That steam, to me, is symbolic of the civilization that has gone, existing for a moment, noisy and purposeless, then vanishing. Of the two forms of life, mankind and the plants, the latter is by far the better.

Still, it is only proper that I, the creator of this vegetable world, should be the ruler thereof. Consequently, in a short time, I shall attempt to gain complete control of those plants, and be supreme ruler over all. I have a plan——

Good Maca! What was that! One of the walls of the glass room has fallen out! The plants are escaping! The heat projector! MACA! OH——

TUOL ORO'S tale ended in a shrill scream of horror and pain, a scream that was cut short abruptly, and ended in a strangely muffled sob. One can picture with some degree of accuracy the scene within his room. In some way, the glass square that had held the original plants had collapsed, letting the deadly organisms escape.

The resulting death of the mad scientist can well be imagined.

And on Kotar, or Mars, if it is the red planet, a species of fungus, growing with incredible rapidity, holds uncontested sway.

THE END.

Across the Void

By Leslie F. Stone

(*Continued from page* 165)

ing more of their complicated home life, but little else. Then he saw his guests growing weary and nervous and he ushered them outdoors again to their steeds, reassuring them that their colonies had nothing more to fear from the Solarites.

When the party had gone Moura returned to his companions. "We have nothing more to accomplish here; our way leads over the mountains. In Dada, I believe, we will find the one we want."

CHAPTER X

Across the Mountains

THE first sun of Kal was setting when the *Yodverl* left the clearing, rising as lightly as a feather from its berth. Moura was at the controls and headed the ship for the distant mountains, that seemed to be the dividing line between Yada and Dada. And in the saffron light from the newly risen second sun they gazed down at the strange world below with its garish reds, purples, blues, greens, yellows, violets and blacks of the jungle lands. To the group in the pilot room this trip seemed as mighty as that of crossing the Void, for they knew no more of what they were to face at its end, and leaving the familiar clearing in the jungle behind was as if they were leaving home once more.

As always, when in the confines of a planet, the *Yodverl* cruised no faster than two hundred miles per hour, and it consumed almost the whole hour to reach the mountains. Occasionally they saw numbers of the bee-"people" as they flew over Yada, and twice they sighted their hives, large hump-backed buildings that the bees erected from leaves and twigs and over which they spread their propolis.* These hives were of astounding size, rising some fifty or sixty feet above the ground, with several doorways at the foot of each, but nothing to break its roughly circular walls. In color they were a dirty brown.

Small dunes, then hills, began to form below, and shortly they were above a wild rolling country that con-

tinued to rise higher and higher until they became mountains, high, rough, irregular and rugged, filled with deep ravines cut by rough tumbling waters and repeating the clash of prismatic hues, raw, crude colors that cut and slashed the hills vehemently until the eye felt tortured by the utter wildness of its chromatic dispersion.

Steadily the *Yodverl* continued to rise with the mountains until its altimeter pointed to thirty thousand feet, and still they climbed upward. Then the last peak of the mountains was crossed and they were 40,410 feet high over seven miles and a half above the sea level! The descent on the other side was more abrupt than the ascent had been, the mountains dropping from heights of from a half a mile to a mile at one jump. Then they were moving over comparatively low hills until there were only the gentle rolling hills of a pretty countryside. Rivers and lakes were plentiful, and in the well-watered land were fine forests and great grassy plains. Rising again, the *Yodverl* was suspended high above the country and their eyes sought for signs of habitation, and far below and ahead they could make out what appeared to be cultivated fields and what was apparently a city.

SATISFIED that they were near their goal, Moura looked about for a landing field, for with his usual caution he did not want to startle the planet's dwellers overmuch, content to bring the one he sought to him instead of seeking him.

Beside a broad lake, whose waters were a deep orange in color, they saw a likely place for their landing, a pretty glade that sloped toward the water, hemmed in with mighty giants of the forest, its red grass smooth as velvet and dotted with beds of many-hued flowers. Here they brought down the ship just as twilight fell upon them. Moura and Ubca sallied forth into the growing gloom to discover if any dangers lurked in the glade, but finding that nothing broke the silence they returned, closing the door behind them against any intruders. After dining and talking a while they settled down to sleep.

Morning found the clearing brightly yellowed by the sunlight; the gentle swish and sigh of the great tree ferns and the rippling of the lake in the morning breezes were the only sounds meeting their ears. The mitu were brought out and picketed in the center of the clearing in full view, and the Solarites settled for a quiet, pleasant day, Elsie bringing Ezra and his books outdoors for his morning lessons, Urto and Nancy going foraging for fruits and berries, while Ubca was away on a tour of inspection alone.

Moura stayed within doors in the seclusion of his work with the task of seeking the creature who was at present uppermost in his mind. For the next few days he scarcely appeared amongst the others, joining them only at meal times and for an occasional swim. Several days passed in this manner, and as each day went by without word from Moura they knew that his task was a difficult one. On the fourth day he joined Elsie in the clearing. She looked up at him with a query in her eyes.

Moura slowly shook his head. "I believe I have reached him, anyaka, but he is stubborn; he refuses to answer the summons I sent him. I think it best to let a few days elapse, then I shall force his coming here, though his mind also is very strong!

"In the meantime I have come to the conclusion that we need a less bulky means of transportation than the *Yodverl* itself. Where is Ubca? I would like to confer with him."

Elsie nodded toward the forest, into which she had seen Ubca disappear earlier. She did not, however, mention to Moura the thoughts she had had concerning Ubca of late. She had noticed how distrait he had become in the few days that had elapsed, but she had guessed at what was passing through the Tor's mind. He was jealous, jealous of this unknown creature upon whom Moura was concentrating his telepathic powers!

Ubca-tor had given up everything on his world for Moura. As a boy he had been attracted to the strange man who had been no more than a weit (baronet), while he himself was a prince, but he had put heart and mind into the keeping of the weit, who was his hero, had obeyed his word even against the prompting of his own reasoning; had given up his palace, his family, his ambitions for Moura. His life might have been vastly different except for Moura-weit's influence. He might have become a man of great name and honor, mated with a fine woman and become the father of a son, but he had turned his back on it all that he might go into exile with the man he had given allegiance to.

Now, seeing Moura so anxiously seeking another, crossing Space itself to reach him, it was not to be wondered that the Tor felt a pang of jealousy. Only he was big enough of soul to realize that the relation of Moura and this strange being was of different ilk than their own friendship. The Tor walked in the forest thinking of all this, conquering his own emotion, and when Moura came to him there he could meet him again with a warm smile. Only if he could have foreseen what bitter enemies they were to become—Moura and this stranger—he would not have had that bad hour among the trees. Instead he might have been more ready to protect Moura-weit, and might even have averted the terrible tragedy that later took place in the Temple of the Pattern!

*A brownish, resinous material, of waxy consistency, collected by bees from the buds of trees and used as a cement.

END OF PART II

OUT APRIL 20th!!

Gala Interplanetary Number

Spring—"AMAZING STORIES QUARTERLY"—Edition

Islands of Space, *by John W. Campbell, Jr.*
Invisible Ships, *by Harl Vincent*
Extra-Galactic Invaders, *by J. Schlossel*
Moon People of Jupiter, *by Isaac R. Nathanson*

Discussions

In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

AMAZING STORIES ACCOMPLISHES ITS PURPOSE

Editor, AMAZING STORIES:

One cold, bleak morning in December, 1928, I stared at a very fantastic picture on the cover of a magazine. A great wall of ice, hundreds of feet high—a glacier, was pushing against a familiar structure—the Woolworth Building. The building was just beginning to crumble—and as I simply had to find out what happened next—I placed two-bits, otherwise known as twenty-five cents, on the counter, and purchased the January, 1929, issue of AMAZING STORIES. I finished the magazine that afternoon. Since then I have read all the monthlies and quarterlies and have collected all but three back numbers.

I never before enjoyed reading until I became interested in your magazine and now I am devouring many books and magazines, but AMAZING STORIES reigns supreme.

As to the reading matter—I am interested primarily in your editorials. Each one is a lesson in itself, and I have learned many interesting things by reading them that I would not find in a textbook.

One of the primary purposes of AMAZING STORIES is to encourage deep thinking on the part of the readers. If one were to compare the Discussion Columns of the first volume and this fifth volume of AMAZING STORIES, he would find that the magazine accomplished its purpose. In this fifth volume nearly all the letters in the Discussion Columns point out various errors in science that the authors have made. There were very few in the first volume—if any at all!

In the last six issues the stories that I enjoyed mostly are as follows: "Skylark Three," "The Drums of Tapajos," "Solarite," "The Second Missile," "The Prince of Space," "Television Hill," and "The Man Who Annexed the Moon."

The authors I have enjoyed mostly since the first issue are: A. Hyatt Verrill, David H. Keller, Miles J. Breuer, Jack Williamson, Harl Vincent, Aladra Septama, John W. Campbell, Jr., Ed Earl Repp, Edmond Hamilton, and Stanton A. Coblentz.

It wouldn't be fair to omit the artists. I once thought that Paul was supreme in this work, but Morey has changed my opinion. Wesso is also very fine. It is hard to draw a distinction between them.

No letter would be complete without a criticism, so I will give vent to my spleen very mildly. "What's the big idea of having one issue on a fine grade paper and the next on a poorer quality? May I suggest making up your mind?"

The friendly argument between John W. Campbell, Jr., and Edward E. Smith, Ph.D., was excellent. I sincerely hope for more of them. Here's wishing you a good start on Volume Six.

Milton Goldsmith,
17 College Avenue,
Greenville, Pa.

(So much has been said about our covers that it is a great satisfaction to find that one of them, at least, secured us so appreciative a reader. While we are too modest to say anything about our editorials, we can assure you that there is a lot of thought put into them and we warmly appreciate such comments as yours. Your selection of authors is a very good one and it is curious to see how it contradicts what some other correspondents think of these writers. We now have three artists doing practically all our work and they are all excellent men. Our authors are reasonably correct in their plots. You must remember that the fictional element that pervades our pages inevitably will lead to what may be considered exaggerations in the line of science, but our motto is that almost anything can become possible in the future. The Campbell-Smith correspondence has certainly become quite interesting and each gentleman seems to be thoroughly imbued with his side of the story. Both these gentlemen are scientists and their letters have a touch of their own. We are gratified at the results that AMAZING STORIES has wrought. More and more people are obviously becoming interested in the science content of the story and they show thought and study in what always seemed a prohibitive subject.—EDITOR.)

CRITICISM OF STORIES IN THE FEBRUARY ISSUE

Editor, AMAZING STORIES:

Though I have read AMAZING STORIES for some four years I have never attempted to comment on any of the stories (many of them fine ones indeed). But after reading the current (February) issue, I am moved to write to you concerning one of the stories.

As usual, I read the "Discussions" column first; then I turned to "Twenty Years from Today," by W. F. Collins. It was interesting, and rather unique.

Next came "The Exterminator," by A. Hyatt Verrill. After reading your note on the first page I was expecting something unusually good. I finished the story with a feeling of intense disappointment.

Then came "The Bees from Borneo," by Will H. Gray. After the first two stories mentioned it was favorably accepted and read. A fairly good piece of work. Interesting.

Then "The Man Who Annexed the Moon," by Bob Olsen. "Well, well," I said to myself after reading the first few lines. "A sequel to 'Four-Dimensional Transit,' eh? Good!" Then after getting well into the story: "Aha, I guess this saves the day for February AMAZING STORIES. This is something like it!" I finished the story very well satisfied indeed.

I am saving "Television Hill" until I get part two.

Somehow I had left "The Purple Plague," by Russell Hays, until last. Russell Hays, I believe, wrote "The Beetle Experiment"? Well, I wasn't so enthused about "The Beetle Experiment"; so I started "The Purple Plague," wondering vaguely what Russell Hays would produce this time. Well, to make a long story short, I could not lay the magazine down until I had finished this exceedingly interesting story. In my estimation it is a masterpiece among science fiction stories—exceedingly well-written, intensely exciting, and holding one's interest from start to finish. It alone was worth many times the price of the magazine.

I have a list of what I consider the best stories published in AMAZING STORIES, Monthly and Quarterly, since I first started reading the magazine in December, 1926. To be included in this list a story must have a certain definite standard. And to this list I unhesitatingly and enthusiastically add "The Purple Plague."

I close my letter with a plea for more stories from the worthy pen of Russell Hays. If you don't receive a flood of letters lauding "The Purple Plague" I miss my guess by a mile.

Henry Hasse,
1126 Trowbridge St.,
Indianapolis, Indiana.

(We are now in the first days of our 6th year, so we are glad to see that we are getting a letter from one of our early readers. We have so many intresting correspondents that we feel that our Discussions Columns are a most interesting part of our magazine. We feel that our correspondents who write these letters are in a sense our authors and we are very proud of the amount of matter which they give us because there is an original touch to every letter. Sometimes the touch is administered with a brickbat. We thank you very much for your list of preferences among the stories but which lack of space compels us to omit. In a general way, you seem to like almost everything we have given so that it makes us feel quite happy to succeed so well with an old time reader, and a thoughtful critic.—EDITOR.)

RADIO
made easy to learn
AT HOME

RADIO is a fascinating profession. Now you can become an expert in any one of its twenty different branches. Simply by studying in your spare time at home or at any of the four resident schools operated by RCA Institutes, Inc.

It is not hard to study radio the way it's taught by RCA Institutes. You learn radio by actual experience on the latest type of radio equipment. And you need not give up the position you now hold. You can study an hour a day or any number of hours a day, at home in your spare time.

The RCA Institutes' Home Laboratory Training Course teaches you in a most thorough manner. You learn about servicing, operating, radio telephony and telegraphy... also instruction in sound motion picture installation, maintenance and repairs. And you receive at no additional cost the complete RCA Institutes' home laboratory equipment, a modern outlay of apparatus furnished to every student, enabling you to easily solve radio problems.

Send for our FREE BOOK Today!

RCA INSTITUTES, Inc.

RCA INSTITUTES, Inc.,
Dept. EX-5
75 Varick St., New York, N.Y.

Gentlemen: Please send me your FREE book which tells about your laboratory method of radio instruction at home.

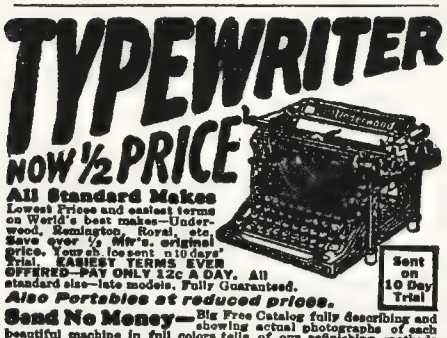
Name.....

Address.....

.....

Occupation.....

Amazing Discovery
Resoles Shoes-9¢
Pays Agents up to $90 Weekly
This amazing new shoe re-soling discovery—SAVASOLE—makes old shoes good as new for a few cents. A scientific substance made of ingredients imported from three continents. Fills in all cracks and breaks. Looks like leather—wears like iron. Rebuilds worn heels. Spread on in a minute with an old knife. Dries hard and smooth overnight. Parents wild over it for children's shoes. Agents earning up to $90 weekly. Fastest selling and most profitable specialty in America.
Spreads on Sole Like Butter on Bread
SATISFACTION GUARANTEED OR MONEY BACK!
SAMPLE FREE
Without experience and starting in spare time you too can enjoy profits like Lewis, Kansas, who made $30.10 his first morning. Berkley, Illinois made $129 a week. Write now for details and FREE SAMPLE. WE'LL PAY YOU 50c CASH TO TEST SAVASOLE!
THE PERFECT MFG. CO., Dept. R-593 Cincinnati, O.


TYPEWRITER
NOW ½ PRICE
All Standard Makes
Lowest Prices and easiest terms on World's best makes—Underwood, Remington, Royal, etc. Save over ½. Mfr's. original price. Your choice sent on 10 days' Trial. EASIEST TERMS EVER OFFERED—PAY ONLY 10c A DAY. All standard size—late models. Fully Guaranteed.
Also Portables at reduced prices.
Sent on 10 Day Trial
Send No Money—Big Free Catalog fully describing and showing actual photographs of each beautiful machine in full colors tells of our refinishing methods making each machine like new. Also tells of our direct-to-you savings and easy-payment plan. Lowest Prices ever offered. Send for Free Catalog at once, also 10 day trial offer. No obligation.
INTERNATIONAL TYPEWRITER EXCHANGE
231 W. Monroe St. Department 593 Chicago

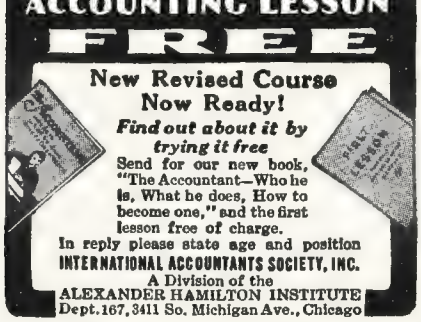
BE A
Traffic Manager
Big Pay—Big Opportunity

Big business needs trained traffic men and pays them well. Train in your spare time for this highly profitable, growing profession. Low cost; easy terms.

Write now for valuable, interesting 64-page book—FREE.

LASALLE EXTENSION UNIVERSITY
Dept. 594-T, Chicago

ACCOUNTING LESSON
FREE



New Revised Course Now Ready!

Find out about it by trying it free

Send for our new book, "The Accountant—Who he is, What he does, How to become one," and the first lesson free of charge.

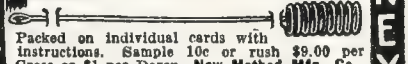
In reply please state age and position

INTERNATIONAL ACCOUNTANTS SOCIETY, INC.
A Division of the
ALEXANDER HAMILTON INSTITUTE
Dept. 167, 3411 So. Michigan Ave., Chicago

MONEY **MAKE BIG MONEY** MONEY

Just out. Lights gas instantly without sparks or flame. Sells like wildfire wherever gas is used. Retails for 25c.

MYSTERY GAS LIGHTER



Packed on individual cards with instructions. Sample 10c or rush $9.00 per Gross or $1 per Dozen. New Method Mfg. Co., Desk ASG-5, New Method Bldg., Bradford, Pa.

IF EACH OF OUR READERS DID THIS!

Editor, AMAZING STORIES:

I am a young woman at 21 who has been a very enthusiastic reader of your magazine for the past three years. Since the first copy of AMAZING STORIES fell into my hands, I have tried to get you at least a new reader once a month. To date there are twelve of us who literally fight to see who can have all the stories read first, and our discussions are often very heated and end in arguments. If your magazine were to stop being published I really don't know what we would do to keep our heads from becoming full of cobwebs.

For the past several weeks I have become very very tired of street cars and elevators. I couldn't understand my feelings until yesterday, when I realized that this method of getting from one place to another was not speedy enough for me since becoming an AMAZING STORIES fan. I can picture myself when I am an old lady telling my grandchildren (who I firmly believe will be then preparing for a trip to the moon) about the dinky old street cars and elevators that were in use during my day, and which required the full attention of the driver or operator to be assured of a safe passage, and which even then were not free from danger.

I am keeping a library of all your books, both monthly and quarterly, and I am as proud of this collection of books as I am of anything I possess.

May I ask one question? Will there be a sequel to Captain S. P. Meek, U. S. A.'s, story, "The Drums of Tapajos"? This is a question our little A. S. Club are all wanting to know. The story was the best we have read lately. Please congratulate all your authors and give a little extra to Captain S. P. Meek, U. S. A., who is our favorite.

Elsie M. Allen,
1938 North 27th Street,
Philadelphia, Penna.

(Some of our readers object to women appearing in our stories, but we have not yet had any objection to their appearing in our Discussions Columns. Some of the nicest letters we have received have been written by members of that charming and interesting sex. They always give a touch of their own to what they write and seem to take us out of the prosaic details of existence. And Miss Allen's interest in AMAZING STORIES is not confined to buying the magazine regularly. She does missionary work among her friends. Effectively introducing one new person a month to the delights and educational benefits of AMAZING STORIES is good work. We could perform wonders with the magazine if we all got together and did likewise! No sequel to Capt. Meek's story, "The Drums of Tapajos" has been promised, but we hope that Capt. Meek will show his appreciation of the compliments his story has received from so many by giving it the sequel you are all asking for. We are sure our authors will appreciate the last sentence in this letter from one who introduces herself as a "young woman of 21."—EDITOR.)

AS A MEANS TO FRIENDSHIPS

Editor, AMAZING STORIES:

Inasmuch as I have been a reader of your magazine since "The Moon Pool" appeared in its pages, I feel that I have a right to send in my opinion of your efforts.

I have never subscribed to the magazine because I am usually traveling, and make my purchase wherever I happen to be. But I also have the folks back home get me a copy every month so as to have them when I get home, so there is where two of your magazines go each month.

As to the stories: When at home, my friends and I have very hot discussions over your stories; all of us have had scientific training, and try to find the flaws in the various authors' reasoning. There are some flaws, of course, but so few that they are hard to find. Also the various ideas presented in your pages prove sources of research in our spare time.

Now for the "Discussions." I wish every magazine had such a section to it. The reason for some of the adverse criticisms that have appeared is that the reasoning of the story is over the readers' head, or at least that is the apparent reason. If your readers would dig in a bit when there is something they do not understand and look it up in a library, they would get real good from the stories instead of mere entertainment.

Don't, for all that is good, stop printing the addresses of the writers of letters to the Editor. Why? As I have traveled I have looked up some of those who have written in. Last summer, in England, I was royally entertained by one of these correspondents. More of your readers should try it. One gets a big kick out of finding a kindred soul while in a strange territory.

McLociard's story "Television Hill" offers choice possibilities for a sequel.

Is it possible to obtain back issues from you? Could you also tell me the name of the publishers of "The Moon Pool?" I would like to secure it in book form.

James Leighton III,
17 Cadwallader Drive,
Hiltonia,
Trenton, New Jersey.

(Our Discussions Columns should be looked upon as a growth of years, that is to say, years of editorial work to bring these columns up to their present level. It is fair to assume that adequate and justly critical letters are the backbone of the Discussions Columns and we believe that some readers think that these columns are the vertebrate column of the magazine; they are very warmly appreciated. If you read our columns, you will find a good deal of matter in the letters criticising us unfavorably, as we make no distinction against unfavorable letters and put in praising and condemning letters alike. It seems strange there are not more of the severe missives, but we seem to have reached our readers in the matter in the magazine. And if we have done so, the credit belongs to the writers of the stories, not to the editors of the magazine. Your English experience is extremely interesting. English hospitality has a fine touch and our cousins across the water certainly possess the art of entertaining in the highest degree. We wonder if you have ever read the book entitled "A Need of Change"? It describes a visit by a bashful American to an elegant English house and his tribulations there. It is very hard to get back issues. We are pretty well run out of them and really want some for ourselves to be bound up for the Office Library. "The Moon Pool" is completely out of print. You might advertise for it, in the Publishers' Weekly, or perhaps you can get it from some second hand dealer. We do not know the name of the publishers. You can undoubtedly find this in the Public Library. Recently we have been led to believe that it is quite possible "Television Hill" will be some how rebuilt. The author is a very ingenious inventor.—EDITOR.)

THE SKYLARK STORIES IN BOOK FORM

Editor, AMAZING STORIES:

May I offer a suggestion on that wonderful scientific story, "Skylark of Space" and its sequel, "Skylark Three"?

Why not print it in book form? I think it's good reading. And I'm sure that quite a few readers of the AMAZING STORIES magazine will agree with me.

Here's hoping Dr. Smith will write another winning story.

Michael W. Wene,
1947 W. Hervey St.,
Chicago, Illinois.

(We are in hopes of publishing the Skylark stories in book form because we believe that they are much in demand by our readers. An astonishing number of requests have been made to us for this. We are in hopes of soon publishing another story by the same author. He certainly has deservedly won great praise from many of our readers.—EDITOR.)

A WISH EXPRESSED FOR ANOTHER "SKYLARK STORY"

Editor, AMAZING STORIES:

I have been mustering up my courage for the past two years to write this letter.

First I would like to know if any of the readers would be so kind as to sell me their back issues of AMAZING STORIES preceding the August issues of 1928.

I haven't any kick to make, but I wish you would print some stories by E. R. Burroughs.

"Skylark of Space" is the best story I have read and "Skylark Three" is a good second. But it only makes me want still one more sequel.

Philip Sturm,
735 Weed Street
Chicago, Illinois.

(We hope that you will get the information you ask for from some of our readers. Back issues of AMAZING STORIES are very hard to get, but your letter may elicit answers from some one who can supply your wants.—EDITOR.)

SOME QUESTIONS IN HIGHER MATHEMATICS

Editor, AMAZING STORIES:

I have just finished reading the February number of AMAZING STORIES and, in my opinion, it was better than usual. "Television Hill" promises to be a dandy serial and the story "The Man Who Annexed the Moon" was above the ordinary.

I am thirteen years old, a freshman in high school, and have read A. S. ever since it appeared on the stands. "The Skylark of Space" and "Skylark Three" were the two stories I enjoyed the most during this time. Could we not have a sequel to "Skylark Three"? Have the descendants of Seaton and Crane be the heroes in a story of inter-galactial war or exploration. Let's have some more about that pure mentality.

Dr. Smith, John W. Campbell, Jr., Capt. S. P. Meek, Bob Olsen, Otis Adelbert Kline, Jack Williamson, Harl Vincent, R. F. Starzl, and Edmond Hamilton are my favorite authors.

The covers and illustrations are all right and your artists are dandy, but in some cases the illustrations and the explanatory words are not the same. The paper A. S. is printed on is O. K. The stories not the looks count. As to reprints why not issue a reprint quarterly? Have a ballot to decide how many people want it and what stories they prefer. There are several other magazines on the stands but A. S. is the only one of the scientific type that hits the bell every time.

I have several questions to ask:

1. If everything is composed of vibrations would there be any limit to the range of vibrations?

2. Might the luminiferous ether be a substance that does not vibrate?

3. When Seaton was traveling faster than light he would have no length, according to the Fitzgerald Theory. Would he then be traveling in two dimensions?

4. Is the speed of gravity infinite?

James E. Mandleco, Jr.
118 West Fifth Street,
Rochester, Indiana

(According to your figures, like Milne's famous characters, you began "when we (you) were very young," and we hope to have you with us for many pleasant years in the future. As regards your questions, we do not know of any limit having been assigned to the range of vibrations, yet it seems as if starting from immobility and vibrating constantly at a higher and higher rate, something might happen at the end. The luminiferous ether is so hypothetical, that when we speak of its vibrations as ether waves, we may almost be said to indulge in metaphors. If Seaton traveled faster than light it would seem that he would have a negative length or no length at all. Perhaps your two dimensions would take care of that. Gravity is simply a force and as it doesn't travel, it cannot have any speed assigned to it.—EDITOR.)

INTERESTING COMMENTS FROM A TWELVE-YEAR-OLD READER

Editor, AMAZING STORIES:

I think your magazine is wonderful, but I really think I liked it better formerly. Wesso's drawings come up to Paul's, but something seems lacking in the magazine. I guess it's only that the magazine is better, and naturally different.

I'm for scientifiction all the way through. I think it's wonderful. I am 12 years old, and know many boys my own age in my own town, but there's very few who will even look at a scientifiction magazine. But the few that do, sure are for it, too.

There's some things that I don't understand in some of the stories, but for most of them they're just right interesting. I like stories especially by Edgar Rice Burroughs, A. Hyatt Verrill, Ray Cummings, Dr. Keller and Harl Vincent. I like interplanetary stories best.

But, so far, I think, AMAZING STORIES is leading in the race of scientifiction magazines, and I hope it continues to do so.

I get every magazine, book, or article that I can, that relates to science, because I am very interested in it.

Please keep Wesso as a staff artist.

Linus Hogemiller,
502 N. Washington Street,
Farmington, Mo.

(We thank you for your intelligent criticism of our efforts. It is especially interesting to run over the list of authors you give as being your favorites. You have made a very good selection. We have no idea of losing Mr. Wesso from our staff of illustrators. He is taking great interest in the work and he and Morey are apparently distinguishing themselves.—EDITOR.)

"How to Make It" FREE!

With 6 Months of Science and Invention

All for Only $1.00

Here's just the book you've been waiting for. "HOW TO MAKE IT—WRINKLES, KINKS, FORMULAS"—the complete all-around guide for practically every kind of repairing and construction. A common-sense aid to the man or boy who feels the urge to see useful finished articles take shape as the combined result of skillful hands and brain!

HERE are new thrills awaiting you—the thrills that come from making and doing things you can take pride in! Here, also, is real recreation and profit!

Breakfast nooks—Fireplaces—Cedar Chests—Modernistic Sideboards—Blow Torches—Auto Accessories—Decorative Lighting Fixtures—Garden Fountains—Wood Lathes . . . whether it's carpentry, plumbing, masonry, electricity, "HOW TO MAKE IT" will tell you what to make and do—and how!

Hundreds of things for your car, for making your home more beautiful and comfortable, for broadening the facilities and usefulness of your own work shop!

Whether it's repairing or working in metals, concrete, woods, stains, paints, piping, or what have you—this handy book, the work of our expert mechanics and engineers, tells you exactly how, in simple English and with scores of clear pictures, diagrams and plans.

A Gift to You from Science and Invention

We are offering you this unusual volume free—with an introductory trial subscription to Science and Invention—the magazine of fascinating fact! In no other magazine will you find such an array of absorbing, authentic, thrilling information from *all fields of popular scientific achievement.*

New developments in radio—in aviation—in all the crafts from the four corners of the earth! A complete survey of the needs in industry and science, with the latest news and description of what has already been accomplished. A "made-to-order" guide and starting point for the experimenter and the seasoned inventor. *Science and Invention is the only magazine of its kind!*

And a Big Cash Saving!

Amateurs and experts in all lines—hundreds of thousands of them, have bought this "How to Make It" book at a substantial price—and thousands of others have subscribed for Science and Invention without thought of a gift.

BUT—We have arranged to ship you this useful book, postpaid, *absolutely free of charge*, and at the same time we will enter your subscription to Science and Invention six full months (regular value $1.50) for only $1.00. *But don't* delay! To get the book FREE and six big issues of Science and Invention at a 33⅓% saving over the single copy cost, mail the coupon while we still have enough books on hand!

Send for Your FREE "How to Make It" Book—TODAY!

SCIENCE AND INVENTION, Dept. 2105-C
381 Fourth Avenue, New York, N. Y.

Gentlemen: Ship me, ENTIRELY FREE, prepaid, the valuable handy book, "HOW TO MAKE IT—WRINKLES, KINKS, FORMULAS"—and enter my subscription for the next six big issues of SCIENCE AND INVENTION at only $1.00 which I enclose.

Name .....

Address .....

City and State .....

OPPORTUNITY AD-LETS

These columns will appear monthly in AMAZING STORIES

Rate—Eight cents a word. Cash should accompany all advertisements unless placed by an accredited advertising agency. Advertisements for less than 10 words not accepted.
RADIO-SCIENCE PUBLICATIONS, INC., 381 Fourth Ave., New York City

ADVERTISING

Advertise. Inch Display 50 magazines, three issues $6.00. Pennell Standard, Covington, Kentucky.

AGENTS WANTED

SELL BANKRUPT BARGAINS at amazing prices from Home or Auto. Big profits. DISTRIBUTOR. Dept. 115, 429 Superior, Chicago.

CALIFORNIA Perfumed Beads, selling like hot cakes. Agents coining money. Catalogue free. Mission Factory, 2328 Picco, Los Angeles, Calif.

New, Vest Pocket Adding Machine—adds, subtracts like $100 machines—costs only $2.50. Lightning fast. Guaranteed accurate. Sells on sight to offices, stores, homes—all who use figures. More than half profit. Write today for FREE SAMPLE offer and full details. Cleary, 303 West Monroe, Chicago, Dept. 17.

YOU ARE WANTED TO RESILVER MIRRORS AT HOME. Profitable business plating autoparts, tableware, etc. Write for information. SPRINKLE, Plater, 815 Marion, Indiana.

ASTROLOGY

FORTUNE TELLING—Crystal Ball tells everything. 50c postpaid. A. Pittle, New Bedford, Mass.

BUSINESS OPPORTUNITIES

Big Bunch Mail. Year 15c. Money making opportunities. Pennell Standard, Covington, Kentucky.

Free Book. Start little Mail Order Business. Hadwil, 38A—74 Cortlandt Street, New York.

CORRESPONDENCE COURSES

Used Correspondence School courses sold on repurchase basis. Also rented and exchanged. Money back guarantee. Catalog free. (Courses bought.) Lee Mountain, Pisgah, Alabama.

DETECTIVES

DETECTIVES. Work home or travel. Experience unnecessary. Particulars free. Write George Wagoner, 2190-X, Broadway, N. Y.

MISCELLANEOUS

Quit Tobacco $1.00, harmless. Pleasant Root treatment. Conquers habit or Money Back. Campbell Products, S 3625 Whittier Blvd., Los Angeles.

Safety Razor Blades Sharpened 2c each. Charles Marston, 476 Gates Ave., Brooklyn, N. Y.

OLD COINS

$5 to $500 EACH paid for hundreds of Old or Odd Coins. Keep All Old Money. Many Very Valuable. Get Posted. Send 10 cents for Illustrated COIN EXCHANGE BOOK, 4 x 6. Guaranteed Prices. We BUY and SELL. COIN EXCHANGE, Room 24, Le Roy, N. Y.

PERSONAL

TALKIE AND MOVIE PRODUCERS are clamoring for new short story ideas, plots, etc. Perhaps you can write one that we can shape and sell for you. One writer (V. M.) received $3,000. New York best market. Write now for free booklet, without obligation, HOW TO WRITE FOR THE TALKIES! Daniel O'Malley Company, Suite B, 1776 Broadway, New York.

PRINTING OUTFITS AND SUPPLIES

COMPLETE PRINTING OUTFITS, presses, type, ink, paper supplies. Write for catalogue, Kelsey Co., G-67, Meriden, Conn.

SONGWRITERS

SONG-POEM writers. We compose music. Guarantee publisher's acceptance. National, 1475-WK Broadway, New York.

SONGWRITERS! Advance royalty payments, new talking picture song requirements, etc., fully explained in our free instructive booklet. Write today. Song poems examined free. Newcomer Associates, 1674-VV Broadway, New York.

Fascinating-Profitable
LEARN TELEGRAPHY This Easy Way—

CARNEGIE—world-famous ex-telegrapher

Thomas A. Edison—Andrew Carnegie—most of the presidents of railroads and other world leaders got their start as Telegraphers.
Today—on land—sea—in the air, men who know the code are commanding big money—in the world's most fascinating profession.
Learn At Home—with TELEPLEX—the Master Teacher. *Write for Folder B-6.*
Teleplex Co. 76 Cortlandt St., New York

Teleplex

See the Craters in the MOON!

Astronomical and Terrestrial
TELESCOPE

Own a genuine Astronomer's Telescope. See thousands of miles away. Make Sun, Moon Planets, Stars your next door neighbors. Moon Craters, Sun Spots, Eclipses, Comets enlarged 30 times. Strange thrills!
Only $3.95
Hours of fun looking at scenery, games, bathing beauties. Great for trips and voyages. Made like telescopes used in observatories. Gerding wrote, "Moon seemed 10 yards away."
See Landscapes, Ocean Scenes, MAGNIFIES 30 TIMES.
Diameter 2 inches. Special friction adjustment for focusing. Adjustable bracket and clamp can be fastened to chair, fence, branch, etc. Finest materials. Will last a lifetime.
Five Days' Free Trial
Rush only $1.00 now. Pay balance ($2.95 plus postage), when postman delivers. Keep 5 days. If not delighted, return telescope and money will be refunded.
SATISFACTION
EARN $10 A DAY Charge 25c to look at the moon
ROLL-O SPECIALTY CO., Dept. Y-401 220 E. 3rd St., Cincinnati, O.

LAW
HOME STUDY Training Program
Write today for new Free book. It tells you how a law training will shorten your road to success. It also carries a vital and inspiring message to every ambitious man. Find out about the opportunities that await the law trained man. Find out how you can learn law right in your own home. No obligations. The book is FREE. Write today.
American Correspondence School of Law
3601 Michigan Ave., Dept. 9385, Chicago, Ill.

NERVES?
Are You Always Excited? Fatigued? Worried? Gloomy? Pessimistic? Constipation, indigestion, cold sweats, dizzy spells and bashfulness are caused by NERVE EXHAUSTION. *Drugs, tonics and medicines cannot help weak, sick nerves!* Learn how to regain Vigor, Calmness and Self Confidence. Send 25 cents for this amazing book.
RICHARD BLACKSTONE, N-465, Flatiron Bldg., N.Y.C.

LAW
Study at home

Legally trained men win high positions and big success in business and public life. Be independent. Greater opportunities now than ever before. Big corporations are headed by men with legal training.
We guide you step by step. You can train at home during spare time. Degree of LL. B. conferred. LaSalle students found among practicing attorneys of every state. We furnish all text material, including fourteen-volume Law Library. Low cost, easy terms. Get our valuable 64-page "Law Guide" and "Evidence" books free. Send for them NOW.
LaSalle Extension University The World's Largest Business Training Institution Dept. 5464-L, Chicago, Ill.

A LETTER RATHER SEVERE IN SOME PLACES FROM AN AUSTRALIAN READER

Editor, AMAZING STORIES:

First and foremost, I must tell you that your magazine is great. The covers are excellent, and also the printing.

Illustrations are also a great credit to you. Few magazines can boast illustrators like Wesso, Morey and Paul. Wesso is undoubtedly the best and Paul would also be good if only he could draw a face decently.

And now, a complaint. It takes a deal of trouble to get AMAZING STORIES, for few shops stock it. When I do get it, it costs me the equivalent of 50 cents in American money. I don't suppose 100 people in Sydney know that your magazine exists.

The majority of stories are very good. Outstanding ones in the past month's are: "Madness of the Dust," "Paradox +" and "World Atavism." "Paradox +" is a marvelous story. I only wish I had had the good fortune to read "Paradox."

Time-traveling is a most fascinating subject. It does not seem as though a time-machine will ever be made, for as yet, no inhabitant of the far-distant has arrived in the present day in his time-machine.

I must devote a paragraph to the praise of "Skylark Three." It is superb and holds the interest from beginning to end. Tell the author to start on another sequel. He is a great draw.

Just a word of praise for "The Voice of the Void" in the Quarterly. I have listed this story as perfect, and "Skylark Three" is the only other story that has perfect to its name.

Now, authors: If "Free Energy" is a sample of Harl Vincent, then he is awful; but this is the first story I have read by him. A. Hyatt Verrill is excellent and uses new plots. "The Feathered Detective," by the way, was disgraceful and a lot of rot. Get something by Merritt, for goodness sake. I favor reprints, if only three in a year.

In conclusion, I did not like "The Green Girl" and "The Universe Wreckers." The latter was disgustingly boring with its "colossal force-rays" and "Faceted-Flyers." As for a collision with an asteroid, inflicting only minor injuries at the speeds described, well let no more be said.

Alan Connell,
668 Military Rd.,
Masman, Sydney, Australia

(It is quite interesting to find how many letters we receive from the Antipodes. Harl Vincent, whom you criticize severely, is an engineer of high standing in the service of one of the great electric companies of America. "The Feather Detective," based on the peculiarity of the coloring material of the bird's feathers, was highly ingenious. It reminded the writer of the dye, rosanilin, that forms brilliant green crystals, which when dropped into water give a beautiful red color. We incline to your belief about the disagreeable effect which might be anticipated with relation to the asteroid, but cosmic dust approaches the nature of asteroids and there is no reason why there should not be asteroids of small dimensions. There are undoubtedly many of them.—EDITOR.)

A REVIEW OF THE "DRUMS OF TAPAJOS" AND OF THE INNER MEANING OF IT ALL

Editor, AMAZING STORIES:

Please permit me to congratulate both you and Capt. S. P. Meek, U. S. A., for the "Drums of Tapajos." It has been wonderful reading and enjoyable throughout, and one of the few stories I have read that carried a second story with it that probably was not noticed by the great body of readers.

Aside from the interest that the several degrees mentioned may have for a couple of philosophical orders, which likewise can come under the general designation of the second story, the great body of people and their lack of thinking ability are excellently portrayed. The Cowans represent the great mass of people, polly-parroted from an educational standpoint, or totally ignorant of an educational veneer.

The Burden-Bearers represent thousands of people, who get a smattering of education, yet are blind to anything but the material wealth represented by the Golden Calf. They are kept in this hypnotic condition by the middle class or Builders, fewer than the Cowans, but representing a step forward in education and enlightenment, yet not blinded to the allurement of the

calf. The planners represent the so-called upper class that guards the Golden Calf for itself by use of its hypnotic power of education, largely used in these days as black magic. Above all are the members of the Cryptic degree, who might be represented by a few who, while initiated, are still worldly, and some even remaining heir to the lusts as represented by the character that stole his sweetheart and returned to the lure of worldly things. The other two main characters represent the real thinker and planner and the doer. How many of those arrows shot in the forest of ignorance brought light and knowledge? Few, I think.

Again, congratulations, Mr. Editor and Capt. Meek.

Geo. L. Smith,
510 Chester Ave.,
Bakersfield, Calif.

(It is interesting to see how a story which is fiction, yet with a basis of natural science, can make the reader think. Your analysis of the different characters is quite interesting.—EDITOR.)

A FEW SUGGESTIONS. THREE OF THEM WILL CERTAINLY BE CARRIED OUT. THE FOURTH ONE WE MAY HOPE TO ACCEPT BUT NOT YET

Editor, AMAZING STORIES:

I have not missed an issue of your publication for some two years, and I am sure I'm correct in stating that there has been a constant, general improvement—especially of late. Your covers and inside drawings are much better, and I believe the change of paper is for the good; I myself like it better. Then, too, the quality of your stories has improved along certain lines. There is, however, a tendency among your authors to people the other planets with terrible and seemingly impossible creatures. I'd rather have them more like human beings, for my part; since I am not a scientist and do not know the forms of life, as we know it, which it would be possible to have on certain planets.

Now, about the February issue:

1—"The Man Who Annexed the Moon" is the best in this issue. No romance improves this kind of story.

2—The second best is "Television Hill." I hope the other parts prove as interesting.

3—Third comes "The Bees from Borneo," "The Exterminator," and "The Purple Plague." Personally, I do not like these kinds of stories as well as the interplanetary ones, but I realize that I would soon become "fed up" on the last named with nothing else.

"Twenty Years from Today," was very good, but I would hardly class it as a story; at least it was a very short one.

A few suggestions in which I am interested:

1—Continue your Discussions column.

2—*Don't* change the name of AMAZING STORIES.

3—*Don't* change back to the old, rough paper.

4—Publish a semi-monthly under a different name, for the same price as AMAZING STORIES, and with the same authors and good quality stories which you feature in AMAZING STORIES.

Finally, I do not read AMAZING STORIES from their scientific viewpoint or for the possibilities which they express for the future. I read them because I like them.

Morris L. Green,
1207 W. Main Street,
Mt. Vernon, Illinois

(If our readers realize how much thought and how much work are put into AMAZING STORIES, they would know that a letter such as yours in which it is stated that improvement in our work is noticed, is decidedly comforting. The beings depicted by our authors as inhabiting other planets cannot fairly be called "seemingly impossible creatures." There is a strong feeling among astronomers that the stars and planets are uninhabited. We absolutely agree with your first three suggestions. The editing of the Discussions Columns we find most interesting and we know that this department pleases our readers. We felt that in publishing the Quarterly, which is much larger than the monthly, we were approximating in matter two AMAZING STORIES a month because the sixteen issues, twelve monthly and four Quarterly give something like one and a half each month. You must realize that the name AMAZING STORIES has now acquired a very high position in the magazine world and we feel that whatever fiction of the type given in this magazine we may publish, it should always be tied up with the name AMAZING STORIES. It has reached a five-year birthday and has won a distinctive place in literature of its type.—EDITOR.)

A FAVORITE AUTHOR'S LETTER WHICH NEEDS NO COMMENT

Editor, AMAZING STORIES:

I am glad to see someone has taken up the request for criticisms I have made. But Mr. Murro has slipped himself, and rather more badly than I did, I am afraid.

I am glad to have errors pointed out—only please pick out errors, not mis-quotations! "Objects could pass right through us just as they passed through the air," quotes Mr. Murro. Please look up that reference again, I believe you will find that it refers to the bombs of the Kaxorians. These bombs were, as stated, made of light tied up in bundles so to speak. The ship was perfectly transparent, and light passed through it as readily as through a piece of glass. In fact more readily, for glass is not perfectly transparent. But, while light passes readily through glass, a can of luminous paint would not. The ship, and later the giant planes, were perefectly *transparent*, but not perfectly permeable. While light bombs could pass through the transparent machine, material bombs could NOT!

The "morlus" discs were given by the Venerians to the Terrestrians as symbols of their gratitude. This would scarcely have been the time to mention that they also gave them a shipload of the same metal. I believe Mr. Murro will agree to that. But I did intend to have the ship loaded up with the morlus and platinum before they returned to earth, and the fact that they had come with cargo-space with the intention of so loading their ship implied that, I believe. And after Arcot's tirade on gold and its uselessness, I certainly did not expect to have him bring any back!

Remember that Arcot's invisibility was attained by a system closely allied to radio; indeed radio is the basis of the thing. The Kaxorians developed a system to break down this invisibility, clearly indicating a knowledge of radio that was well advanced, and further on, built a similar device for their own ships. I think this would prove to Arcot that they had radio. That the Lanorians did not, was easily understandable in view of the isolation that the two nations had maintained.

Arcot told why he could not use the invisibility disrupter instead of the luminous paint on the Kaxorians. I believe, the reason was that the huge size of the ships permitted them to carry an exceedingly powerful set, a set far beyond the power of any set Arcot could rig to his smaller generator. Hence Arcot could not break down the far more powerful Kaxorian ship's field.

The ship, in space, was turned aside by rockets, which would naturally turn the collector discs aside, and destroy their power as energy collectors. But would it not be a simple matter to merely rotate the ship on one of its axes, and bring them once more into the sunlight?

The sharpness of the turn possible to any body, depends on the force counteracting the centrifugal force, that is, the centripetal force. Thus, if the radius of the turn made by a weight on the end of a rubber band is made too short, the band stretches till the added tension of the rubber band and the increased radius find a balance once more. The radius of curvature of the ship in space was similarly limited. Here the rockets took the part of the rubber band in causing the turn, and they made a turn, or tried to force the ship to make a turn which would have no radius, in other words, tried to make a right angle turn. The ship reacted to this, and made a more or less sharp turn, the force exerted by the rockets and the centrifugal tendency of the ship would reach a balance, and the radius of the turn be thus determined.

Then it is obvious that under no conditions could the centrifugal force more than equal the full power of the rockets. If Arcot and his friends could stand the pressure of the rockets, they could stand any centrifugal force developed—right? As a matter of fact, the radius of curvature of the circle, or curve they could thus stand would be of the order of 1,500 to 2,000 miles, giving an acceleration equal to approximately four to five gravities. Beyond that it would be distinctly uncomfortable, if not actually dangerous.

Mr. Murro has evidently read that story closely, yet there are a number of errors, some technical, and some common sense errors. One of the latter has been missed, it seems. How about men who are made perfectly transparent, every bone, every organ, every nerve? That includes their eyes doesn't it?

There are five errors of more or less import in this story that I know I made, for the benefit of the story. Four of these are technical.

John W. Campbell, Jr.,
46 Bigelow St.,
Cambridge, Mass.

Creates Miracles for You

Bring miracles into your life—happiness, health and freedom from worry.

Don't waste years WAITING for these things. CREATE THEM NOW.

A key to your problems is offered here.

Astounding Results

Harness your vast mind power to your problem—then watch the results—learn to direct the creative forces of your mind.

Thoughts are material, like bricks, lumber and steel. To build with them you must have a definite plan—or they are wasted. Inspirations, ideas, originate in your mind, but they must be controlled, mastered, if you wish, to make them serve you. A few rules, simple and practical, will be the means of showing you how to CHANGE the COURSE OF YOUR LIFE to one of happiness.

Are you willing to unlock the treasures of your mind—or gamble with luck and chance?

Free Book Explains

Thousands in America today, and in many other lands, have demonstrated marvelous changes in health, peace and joy by using their MIND POWER. Write today for a free copy of the book, "LIGHT OF EGYPT," and learn how you may change the course of your life. Address letter to:

LIBRARIAN V. J. E.
ROSICRUCIAN BROTHERHOOD
(AMORC)
SAN JOSE, CALIFORNIA
(Perpetuating The Original Rosicrucian Brotherhood)

"Pick YOUR Government Job"

Work for Uncle Sam. Get good pay, regular increases, vacation and sick leave with pay, steady advancement, pension. Send for my free book "*How to Secure a Government Position*"—tells about all jobs, near home or traveling, the money, what you need to know and how to get posted. Forget "job hunting." Open to Citizens 18 to 50. IMPORTANT... Get ready NOW for the next Railway Postal Clerk Examination! Yearly pay with allowances, averages $2750.00. Prepare yourself NOW. Send coupon at once

A. R. Patterson, Civil Service Expert,
PATTERSON SCHOOL, 675 Wisner Bldg., Rochester, N. Y.
Please send me without obligation, your free book "How to Secure a Government Position."
Name.....
Address.....

Learn **Advertising at HOME**

Send your name and address for free booklet giving interesting information and vital facts about Advertising. Find out how we prepare you at home, in your spare time, for the opportunities open in this fascinating business. Practical work. No text books. Old established school. Successful graduates everywhere. Just the plan you have always wanted. Write today. No obligation.

PAGE-DAVIS SCHOOL OF ADVERTISING
Dept. 9385, 3601 Michigan Ave., Chicago, U. S. A.

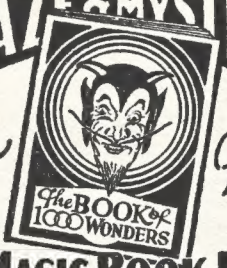
No Wind Can Blow It Out

SOMETHING DIFFERENT
Mystery Cigar Lighter
MAKE UP TO **$25 A DAY**

Showing this scientific marvel to men. New principle of ignition. What makes it light? No flint or friction. All guaranteed. Sample with sales plan 25c. Sample gold, silver or chromium plated, $1.00. Agents, write for proposition.

NEW METHOD MFG. CO.
Desk. AS-5, New Method Bldg., Bradford, Pa.

AMAZE & MYSTIFY!



Free Free

BIG MAGIC BOOK FREE!

Be Popular—Learn to Entertain

My famous "Book of 1000 Wonders" now sent Free! Hundreds of tricks require no skill. You can do them. This book describes effects for Pocket, Parlor or Stage, all easily learned. Also Puzzles, Jokes, and Imported Novelties. Large assortment, lowest prices. You will amaze and mystify your friends. Write today!

LYLE DOUGLAS, Station A-9, Dallas, Texas

Play the Hawaiian Guitar like the Hawaiians!

Only 4 Motions used in playing this fascinating instrument. Our native Hawaiian instructors teach you to master them quickly. Pictures show how. Everything explained clearly.

Playin Half Hour — After you get the four easy motions you play harmonious chords with very little practice. No previous musical knowledge needed.

Easy Lessons — Even if you don't know one note from another, the 52 printed lessons and clear pictures make it easy to learn quickly. Pay as you play.

GIVEN when you enroll a sweet toned HAWAIIAN GUITAR, Carrying Case and Playing Outfit Value $18 to $20 No extras—everything included

WRITE AT ONCE for attractive offer and easy terms. A postcard will do. ACT!

TENOR BANJO and other courses. The same thorough instruction on Tenor Banjo, Violin, Tiple, Tenor Guitar, Ukulele, Banjo Ukulele. Well-known instructors. Write for full information.

FIRST HAWAIIAN CONSERVATORY of MUSIC, Inc. 9th Floor, Woolworth Bldg., Dept. 207, New York, N. Y.

Approved as a Correspondence School Under the Laws of the State of New York—Member National Home Study Council.

EARN MONEY AT HOME

YOU can make $15 to $50 weekly in spare or full time at home coloring photographs. No experience needed. No canvassing. We instruct you by our new simple Photo-Color process and supply you with work. Write for particulars and Free Book to-day.

The IRVING-VANCE COMPANY Ltd.
302 Hart Building, Toronto, Can.

"Concentration"

Learn how to keep your mind on one subject despite interruptions. Great possibilities through thought control. Companion book *"How to Conquer Fear,"* shows how to avoid worry, doubt, anxiety, nervousness; gain contentment. Both wonderful books, by F. W. SEARS, $1 postpaid. Satisfaction or money back.

CENTRE PUBLISHING CO.
1123 Broadway—A-50 New York

$1260 to $3400 Year

Men—Women—18 to 50
STEADY WORK
Paid Vacations
Common Education Usually Sufficient

Mail Coupon Today—SURE

COUPON

Franklin Institute
Dept. B-177
Rochester, N. Y.

Gentlemen: Rush to me FREE of charge, list of U. S. Government big pay positions now obtainable. Send me FREE 32-page book describing salaries, hours, work, vacation and giving full particulars on how to get a position.

Name.....
Address.....

A RESUME OF CRITICISM FOR THE 1930 AMAZING STORIES

Editor, AMAZING STORIES:

A rather lengthy letter of mine written last September in answer to criticism made by a certain reader of one of my letters in a former issue was never printed and I'm quite peeved. I thought you advocated comments of readers on other fellow-readers' letters! Well, maybe it was too long to be printed, so here goes for a shorter one.

This being the final month of another year, what is more appropriate than a general review of AMAZING STORIES for the year 1930! I find, in looking over my copies, that the May issue was the banner number. Therein were five remarkable stories. First of all R. F. Starzl's (that incomparable weaver of scientific plots) wonderful story, "Madness of the Dust," a masterpiece of the new era of scientific fiction. All his stories, and epecially this one, are not mere accounts of "professors," "discoveries," nor fantastic tales of doomed worlds and conquering heroes, but truly great tales of human interest, plausible and mighty interesting. "The Gimlet," by Endersby; "Synthetic," by Cloukey; "The Ivy War," by Keller, and "The Universe Wreckers," Hamilton were all contained in that priceless May number.

For convenience I have gone through all twelve numbers of 1930 and marked opposite each story in the index a key letter to indicate its degree of excellency. The key letters are S (superior), E (excellent), G (good), M (mediocre), and P (poor). I found that for 1930 there were 6 S's, 16 E's, 18 G's, 23 M's, and 3 P's. By superior I mean a story of value both as to content of science and story-value, plausible, imaginative, and withal interesting. In the excellent category are found stories with the above attributes modified to a certain extent. Good represents readable stuff but lacking in some one or other main attribute. Mediocre (the largest group) stories are supplied by authors of very little ability, or good authors who had an off moment. The poor stories (I'm glad to say only three impressed me as such), are just unreadable and incongruous and boring.

Now I realize that the above opinions represent only my way of thinking and perhaps no other A. S. reader would agree with me entirely, but I have attempted to be fair and impartial, and to give a true estimate of A. S.'s entertainment value for 1930. I can safely say 1930 is the best year of the few years of its existence and the quality is evidently going up and not down.

The six stories I picked as almost flawless perfections of scientifiction are (this is *not* in order of merit), "The Eclipse Special," by Lamkin; "Skylark Three," by Smith; "South Polar Beryllium, Limited," by van Dresser; "The Gimlet," by Endersby, and "The Drums of Tapajos," by Meek. I know readers will severely question my choice of the third for I read more unfavorable criticism than favorable comment of that story, but I advise them to reread the story and realize its flowing style and true-to-life-ness. "The Gimlet" may also be mentioned as a story of the superior type, but I conclude the author put an immense amount of thought in the tale. I am almost tempted to label "Skylark Three" superior plus, not because of other readers' gushing praise, but because it is unique. "Madness of the Dust"—I can only say, look who the author is. But aside from his commendable work, this story is par excellence for its exceeding plausibility and gripping interest. If I'm not mistaken, many other readers have praised that superb classic. "The Eclipse Special" is brimming over with solar science and still does not lack that other essential, story-value. "The Drums of Tapajos" I finally decided to put in the superior class by reason of its human characters and reality of scenes, especially those of the jungle. I have attached a list of the sixteen stories of the excellent class and the editor may or may not print them.

And now comes the important consideration: who were the best authors of 1930? Strict adherence to the key-letter system gives Cloukey first place with an unbroken record of 4 E's, Verrill next with 3 E's, and 1 P, Starzl, 1 S and 1 E, Meek 1 S, 1 E and 1 M, etc. My opinion as to who is best is based only partly on the above list and partly on their work in other magazines. As a result I place Starzl in first place, Cloukey in second, Verrill in third, and any of the following in fourth place: Smith, Campbell, Hamilton, Breuer, Meek, Keller, Vincent. Smith is a decidedly superior writer but the volume of his stories (only two in fact) makes it impossible to place him first; the next story he writes may be a severe let-down, even as Verrill, good old standby, once wrote a P story, although his usual average is E. Starzl has written enough by which to judge his quality and I find him in the lead, an author on a par with such writers as E. R. Burroughs, Murray Leinster, and Ray Cummings. His stories have that more or less rare quality of human-interest such as the majority of A. S. stories are sincerely lacking in. Cloukey comes in for credit due to the bizarre plots he brings to life and the puzzling, brain-stimulating sequences which are unique in his tales. Verrill is characterized by saneness and plausibility and a wealth of knowledge, which he instills by his stories. Space does not permit a discussion of the other great authors named above.

On the whole, let me conclude, AMAZING STORIES has led and is still leading the field of science fiction, despite the rise of other magazines of the same type, and here's to its long dominion.

A short letter! Good Lord, it's far from that but I think you can see, Mr. Editor, that it was impossible to shorten it and say all I wanted of AMAZING STORIES' exploits in 1930.

Otto Binder,
2648 North Luna Ave.,
Chicago, Illnois.

(We are sorry we did not print your letter of last September—sorry, that is, if we did not print it. We agree with you in your estimation of Starzl's ability as a writer. We certainly hope to get more stories from Starzl. But people's opinions about short stories will vary greatly. Some advocate a rigorous adherence to what a century ago would have been termed "the unities." The way in which you classify your authors is rather interesting. Dr. Smith has written very little fiction in his life. We are gratified at the praise he has received, which is not a bit more than he has thoroughly deserved. Mr. Verrill has every right to be assigned a welcome by you. He is highly educated and one of the world's authorities in archeology. However, the letter, and it is not a bit too long, speaks for itself and gives the writer's opinion excellently.—EDITOR.)

A LETTER FROM AN ENGLISH READER

Editor, AMAZING STORIES:

Having been a reader of your magazine for some time now, I feel that I ought to write my appreciation of your efforts to place the magazine on a first-class footing. I was first attracted by the cover and found the stories to my liking. Since then I have read as many as I can get hold of. In England one cannot get A.S. monthly, a fact which I often bewail, but every two or three months, we get a few together. This, of course, is bad, for it doesn't take me two or three months to read them, and then I have nothing to read in the way of scientific fiction.

I agree, in a way, with Mr. Dalton whose letters I have just been reading in your Discussions Column of the May issue—so far away from civilization are we that I have only just been able to procure your May number—that feminine interest has little or no place in scientific stories.

I do not know much about science, but your stories have exactly the right amount of fiction and science to make them understandable to the layman. Another thing I wish to write about is that the stories are too short. They should be made longer. I also like interplanetary stories. You can't print too many for me.

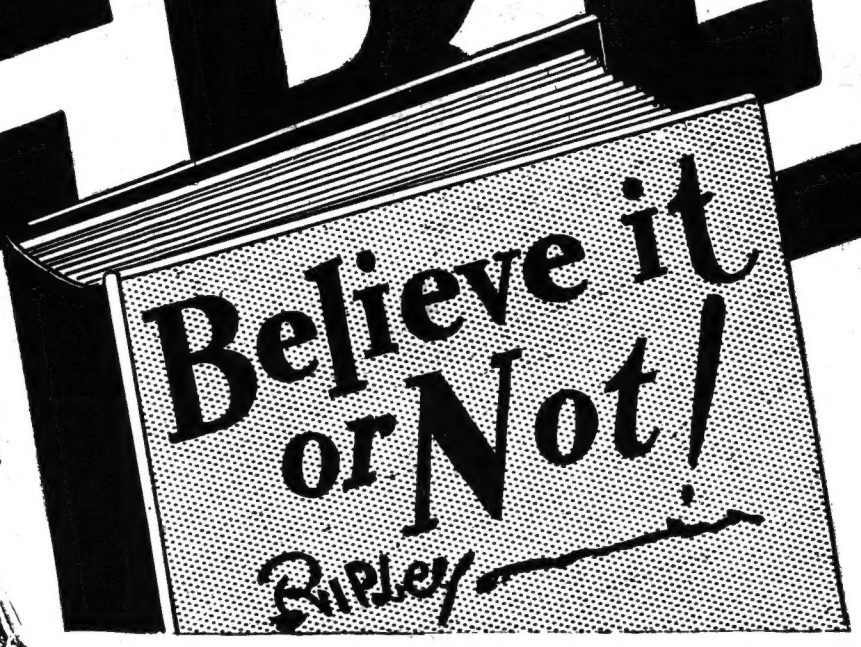
The three stories I liked best in this issue were "The Universe Wreckers," "The Gimlet," and "The Ivy War." Well, I think I've given you enough trouble by asking you to read all I've written, so I'll close now.

Is it possible for you to do anything about speeding up your magazine to get to England about every five or six weeks instead of every two months?

Mark Rodkoff,
11 Regal Place, Old Montague St.,
Whitechapel, London, E 1, England.

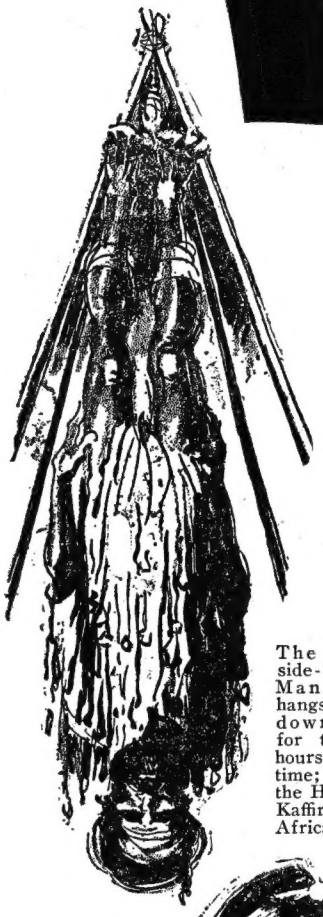
(We have two representatives of our magazine in London, one of them rather near to your address. You should have no trouble in getting AMAZING STORIES every month and we hope that you will subscribe. The term human interest has often been thrown at the editors of AMAZING STORIES. There is an implication in it that some readers feel that humanity has an appeal, which is apt to be forgotten by the authors of scientific stories. This seems very reasonable and very plausible. A little feminine interest, as you call it, whatever one may personally feel, is certainly a distinct phase of human nature and we do not agree with you that fault should be found with its inclusion as an element of the story. One of the great fields of writing of the present era is that devoted to or covered by what is known as "the short story." Our magazine is largely devoted to this form of literature, so you cannot blame us if some of our stories, like those of Poe and Wells, are short. Subscribing to the magazine would solve your problem.—EDITOR.)

FREE



with this new Special Offer

from AMAZING STORIES



The Upside-Down Man who hangs head downward for three hours at a time; and the Horned Kaffir of Africa!

HERE are a myriad of wonder tales set down in cold print by Robert L. Ripley, the famous, amazing traveler who has traversed sixty-nine countries in search of the almost unbelievable material now incorporated within the covers of this book. *HE CAN PROVE EVERY STATEMENT HE MAKES!*

In this sensational book he tells his incredible stories of man-eating clams, the barking bird, oysters that catch mice; he describes the whistling trees and fountain of blood; he talks with you about the Ever-Standing Men and the Upside-Down Men of Benares; he introduces you to a woman who has sixty-three husbands, one who had sixty-nine children, and a wholesale father who was the proud possessor of 548 sons and 340 daughters! You will find your old favorites, and some new puzzlers which Mr. Ripley has uncorked for the first time. *BELIEVE IT OR NOT!*—this volume contains a thousand new things under the sun!

Acclaimed by Critics All Over the Country!

Newspapers and reviews from coast to coast have only unlimited praise for Ripley and his book. The New York *Sun* says: "BELIEVE IT OR NOT! is a book extremely difficult to put aside. It is one of the most fascinating volumes we have seen in months—a book full of strange, weird and unbelievable facts, accompanied by excellent drawings by the author." From San Francisco another reviewer says: "When a reviewer gives the 16th hour of a 16-hour working day to reading BELIEVE IT OR NOT! and when he stays up an extra hour to finish it, you know it must be fascinating."

And now this book, for which many hundreds of thousands of people have gladly paid a substantial price comes to you absolutely FREE OF CHARGE with a special 15 months' subscription for AMAZING STORIES!

With a Cash Saving on Your Subscription!

AMAZING STORIES, the one magazine of weird fantastic stories from the borderland of Science, where the incredible meets the possible—offers you Ripley's BELIEVE IT OR NOT! book with a 15 months' subscription for only $3.00. 75c less than you would pay for the same number of single copies! AND YOU DO NOT NEED TO SEND THE ENTIRE AMOUNT NOW! Simply send $1.00 with the coupon below, as your first payment—and pay the additional $2.00 to the postman when he delivers the gift book to your door! We prepay *all* postage and C. O. D. expenses. But don't delay—our stock of these books is limited, and to take advantage of this offer you will want to sign the coupon immediately!

Mail Coupon TODAY!

AMAZING STORIES, Department 2106-A
381 Fourth Avenue, New York, N. Y.

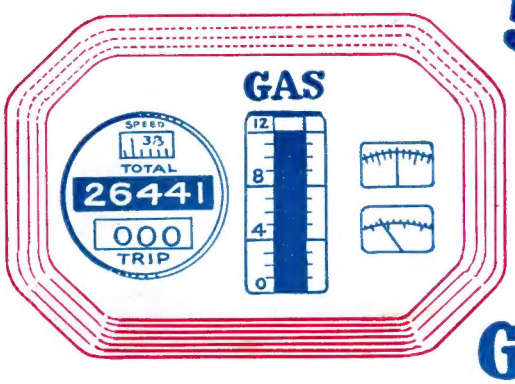
Please send me immediately Ripley's book, "BELIEVE IT OR NOT!" and enter my subscription for 15 months of AMAZING STORIES for $3.00. I am enclosing $1.00 with this order, and will pay the postman only $2.00 when the book is delivered at my door. You pay all postage and C. O. D. expenses.

Name .....

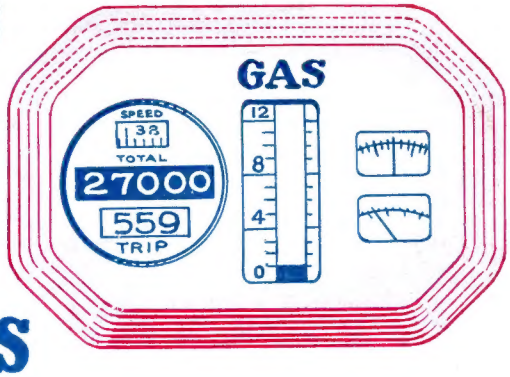
Address .....

City and State .....

Over the Mountains from Los Angeles



559 Miles on 11 Gallons of GAS



Think of it! FIVE HUNDRED FIFTY-NINE MILES over rough mountainous country burning only ELEVEN GALLONS OF GASOLINE. Imagine more than FIFTY MILES to the GALLON. This is what the WHIRLWIND CARBURETING DEVICE does for D. R. Gilbert, enough of a saving on just one trip to more than pay the cost of the Whirlwind.

THE WHIRLWIND SAVES MOTORISTS MILLIONS OF DOLLARS YEARLY

Whirlwind users, reporting the results of their tests, are amazed at the results they are getting. Letters keep streaming into the office telling of mileages all the way from 22 to 59 miles on a gallon, resulting in a saving of from 25 to 50% in gas bills alone.

Mark H. Estes writes: "I was making 17 miles to the gallon on my Pontiac Coupe. Today, with the Whirlwind, I am making 35 5/10 miles to the gallon. Am I glad I put it on? I'll say so!"

P. P. Goerzen writes: "I made an actual test both with and without a Whirlwind, getting 13½ miles without and 34 6/10 miles with the Whirlwind, or a gain of 21 miles to the gallon. The longer the Whirlwind is in use on the machine, the better the engine runs, has more pep and quicker starting. It makes a new engine out of an old one, and starts at the touch of the starter button."

R. J. Tulp: "The Whirlwind increased the mileage on our Ford truck from 12 to 26 miles to gallon and 25% in speed. We placed another on a Willys-Knight, and increased from 12 to 17 miles per gallon.

Arthur Grant: "I have an Oakland touring car that has been giving me 15 miles to the gallon average, but I can see a great difference with the Whirlwind, as it climbs the big hills on high and gives me better than 23 miles to the gallon of gas, which is better than 50% saving in gas."

W. A. Scott: "I had my Whirlwind for three years. Winter and summer it gives the same perfect service, instant starting, smoother running, and what I saved in gasoline these last few years has brought other luxuries which I could not have afforded previously."

Car owners all over the world are saving money every day with the Whirlwind, besides having better operating motors. Think what this means on your own car. Figure up your savings—enough for a radio—a bank account—added pleasures. Why let the Oil Companies profit by your waste? Find out about this amazing little device that will pay for itself every few weeks in gas saving alone.

FITS ALL CARS

In just a few minutes the Whirlwind can be installed on any make of car, truck, or tractor. It's actually less work than changing your oil, or putting water in the battery. No drilling, tapping or changes of any kind necessary. It is guaranteed to work perfectly on any make of car, truck or tractor, large or small, new model or old model. The more you drive the more you will save.

SALESMEN AND DISTRIBUTORS WANTED

Free Sample and $100.00 a Week Offer

Whirlwind men are making big profits supplying this fast-selling device that car owners cannot afford to be without. Good territory is still open. Free sample offer to workers. Full particulars sent on request. Just check the coupon.

WHIRLWIND MANUFACTURING CO.

999-314-A Third Street Milwaukee, Wisc.

GUARANTEE

No matter what kind of a car you have—no matter how big a gas eater it is—the Whirlwind will save you money. We absolutely guarantee that the Whirlwind will more than save its cost in gasoline alone within thirty days, or the trial will cost you nothing. We invite you to test it at our risk and expense. You are to be the sole judge.

FREE TRIAL COUPON

WHIRLWIND MANUFACTURING CO.
999-314-A Third Street, Milwaukee, Wisc.

Gentlemen: You may send me full particulars of your Whirlwind Carbureting device and free trial offer. This does not obligate me in any way whatever.

Name .....

Address .....

City .....

County ..... State .....

☐ Check here if you are interested in full or part time salesmen position.

VOL. 6 NO. 2
AMAZING STORIES SCIENTIFICTION
MAY 1931